



**FEDERAL
PUBLICATION**

728.7

United States Government
Designated Depository
Library of Washington University
St. Louis, Mo.

T 28.7 855

REPORT

OF THE

DIRECTOR OF THE MINT

UPON THE

PRODUCTION

OF THE

PRECIOUS METALS IN THE UNITED STATES

DURING THE

CALENDAR YEAR 1885.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1886.

PRODUCTION OF PRECIOUS METALS.

L E T T E R

FROM THE

ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

*A report of the Director of the Mint upon the production of precious metals
for the year 1885.*

JUNE 22, 1886.—Referred to the Committee on Coinage, Weights, and Measures and
ordered to be printed.

TREASURY DEPARTMENT,

June 10, 1886.

SIR: I have the honor to transmit herewith the report of the Director
of the Mint upon the statistics of the production of the precious metals
in the United States for the calendar year 1885.

Very respectfully,

C. S. FAIRCHILD,
Acting Secretary.

HON. J. G. CARLISLE,
Speaker of the House of Representatives.

LETTER OF TRANSMITTAL.

TREASURY DEPARTMENT, BUREAU OF THE MINT,
Washington, D. C., June 10, 1886.

SIR: I have the honor to present herewith my first Report as Director of the Mint on the Production of the Precious Metals in the United States for the calendar year 1885, being the sixth of a series of reports which have been prepared by this Bureau under annual appropriations and printed under the same title by order of Congress.

The series is practically a continuation in part, after a hiatus of four years, of a series beginning with the report for 1867 by J. Ross Browne, as special commissioner, under a provision of the appropriation act of July 28, 1866, authorizing an expenditure of \$10,000 for the collection by the Secretary of the Treasury of "reliable statistics and information concerning the gold and silver mines of the Western States and Territories, which shall include the labor and capital employed, the product and the modes of working the same, and which information shall be reported to Congress." (Stats. at Large, XIV, 311.)

Reports for 1866 and 1867 by Mr. Browne were succeeded by eight annual reports by Dr. R. W. Raymond, all of which have been printed. The report for 1875 was the last of this unbroken series.

The act making appropriations for the sundry civil expenses of the Government for the fiscal year 1881 contained an appropriation of \$5,000 "for the collection of statistics relative to the annual production of the precious metals in the United States, to be expended under the direction of the Secretary of the Treasury."

This work was assigned by the Secretary to the Director of the Mint, whose first report was for the calendar year 1880.

The appropriations by acts of Congress for subsequent years have expressly provided that the collection of statistics of the production of the precious metals shall be under the direction of the Director of the Mint, and have been included in the appropriation for contingent expenses of the Bureau of the Mint, as provided by the annual legislative, executive, and judicial appropriation bill.

The appropriation for 1882 was \$4,950, and for the last four years, including the present fiscal year, \$4,000 each year.

Following the practice of my predecessor, I have availed myself of the services of the officers of the Mint service of the United States, not only to compile such statistics of the precious metals for the calendar

year 1885 as are to be drawn from the records of the operations of the several mints and assay offices of the United States, but also, in several instances, to gather returns of the production of the precious metals in the several states and territories, wherever practicable, by inquiries extending beyond the actual relations existing between these institutions and the producers of the precious metals. Special agents have also been employed in mining districts where no facilities could be provided by any other means for the collection of this class of statistics, especially in districts remote from the locations of United States mints and assay offices.

By thus availing itself of the organization of the Mint service this Bureau has been enabled not only to perform the labor for which the annual appropriation by Congress of \$4,000 has been made, within the narrow limits of that appropriation, but to insure as high a degree of accuracy as can be expected to be attained in the compilation of such statistics from irregular sources. Yet the results obtained would fall far short of their present approximate completeness but for the generous spirit of co-operation which has been manifested by the officers of the Mint service in their willing and gratuitous performance of extra labor; by the special agents employed; by the large private refineries; by bankers and brokers dealing in gold and silver, and by gentlemen connected with the private transportation and express companies. The several modes of information employed supplement the official compilations of this Bureau, as derived from its records, while the results thus obtained tend to confirm the same as accurate and nearly complete.

During the period of some six years since this work has been assigned to the Bureau of the Mint, it has become clear by experience that the deposits of the precious metals at the mints and assay offices of the United States include essentially the whole amount produced in the United States, with the exception of such amounts as are directly exported without having been deposited at the United States mints and assay offices. Information, however, obtained from private refiners of the United States and from other sources, especially from the Bureau of Statistics, enables us to check the official printed statements of exports and imports. I have in the present report adopted a plan of reducing the information presented as near as practicable to the usual limits of statistics, dispensing with the textual description of mines and mining districts, which has been one of the features of the previous reports of this series. Wherever verbal descriptions have been employed for the purpose of elucidating the tabular statements they are furnished under the names of the contributors, who alone are responsible for whatever opinions may be expressed or implied, and for the accuracy of other statements. It is believed, however, that in compliance with instructions issued by myself, scrupulous care has been exercised by all to guard against the expression of opinions, as well as against forecasts by way of estimates of problematical conditions connected with mining enterprises.

I am impressed with a sense of the individual responsibility which, in the reports of this series, attaches to descriptions of mines and mining districts, and to anything which might appear to be of the nature of opinion as to the merits of the same, even though given, as in most if not in all cases in the past, only by citation from other sources. Instances have been brought to my notice of the employment of excerpts from previous reports of this series as advertisements for mining ventures both in this country and abroad. For this further reason I have refrained from the use of descriptive material of any kind for the purpose of this report, even upon the personal responsibility of individual contributors.

I have also considered it necessary to forego the usual paid essays on mining and metallurgical subjects, believing such matter, however acceptable to the public, to be irrelevant to the specific requirements of the appropriation. Thus the bulk of the volume has been materially reduced, much to the reduction of the cost of printing, and without sacrificing anything material, it is hoped, to its specific purpose.

The opportunity accorded to this Bureau by the annual appropriation, of which the series of reports above mentioned is the result, is one that cannot be too highly appreciated in the interest of mineral statistics, especially in view of the fact that it effectually supplements the annual report of this Bureau to the Secretary of the Treasury for each fiscal year. The statistics for the fiscal year, however, are not available to common use without laborious transposition into periods of calendar years, as required by the general method of statistical science.

Since assuming the duties of Director of the Mint, I have become aware of the high esteem and wide appreciation in which both of the reports of the Director of the Mint, namely, the annual report for the fiscal year, and the annual report on the production of the precious metals for the calendar year, are held, not only in the United States by persons interested in monetary science, political economy, and mineral industries, but by the same class of persons abroad, including a number of distinguished correspondents, learned societies, and editors of periodical exchanges.

In the interest of pure statistics I have felt bound to avail myself of every opportunity to rectify any errors which have become known to me in former tabulations of statistics, and to take exception, wherever in my judgment it seemed proper, to particular items, or to general estimates resting upon individual opinions, whether on the part of my predecessor in office or of collaborators in the field of monetary or mineral statistics.

In the study of this subject the best facilities for information are enjoyed by the latest writer, not only through the mere accumulation of material and consequent and extended facilities for comparisons, but through the advantage of employing larger, rather than smaller, divisions of time in the composition of aggregates and for the purpose of

generalization. Especially is this true with regard to estimates, the material for which often proves the more complete the less it be separated into small divisions of time.

I feel assured that my predecessor will be no less interested than myself to secure for estimates given by him the closest approximation to truth, by making available additional information presented from time to time as to periods treated by him in previous reports of this series, as the work of this Bureau in the line of its statistical studies progresses. I shall certainly entertain the same feeling with regard to the work of the Bureau, now under my supervision, whenever it shall fall to others to employ my figures in the future, as at present the work of previous Directors of the Mint is employed and carried along from year to year as a fund of official statistics, to which every fresh compilation is an annual addition.

How far the material of the present report rests upon actual statistics and how far upon estimates will fully appear from the context. To the extent that the material here presented to Congress is made up of returns from the records of the Mint service proper, it lays claim to strict accuracy and completeness. Probably no more accurate or complete system of accounts can be instanced than that of the Bureau of the Mint, nor would it be easy to instance any set of accounts which are submitted to more crucial tests or more rigorous checks before completing their round of examination and audit.*

To the extent that the records of the Mint service proper are supplemented for the purposes of this report by the result of direct inquiries and by estimates on the part of the officers of this Bureau, under the supervision of the Director, on whom responsibility for the same as work of an individual character virtually falls, the material of this report is fairly open to criticism by the light of the methods as described, as are also the methods themselves.

Material of the latter description, however, it is proper to remark, does not present itself ready to hand, and is in part far from what should be the material which enters into official statistics even in a supplementary way and to a minor extent, especially where the major part of the statistics are above question. Thus it happens that the introduction of certain items, offered as approximations and resting more or less upon hypothesis, but entering into certain totals, opens the door to objections by way of criticism in matters of opinion or question, and even affords plausible grounds for exception in such matters of opinion to the combined results as published in the reports of this series. But it

* Hon. John Sherman, ex-Secretary of the Treasury and President *pro tempore* of the Senate, than whom no better authority can be quoted, well said on the floor of the Senate June 30, 1886: "If there is any department of the Government that is run without a possibility of fraud or wrong, it is the mints and assay offices of the United States. * * * It is probably as exact a science as can be established anywhere in any branch of the Government."

too frequently happens that the criticisms elicited by certain parts of the reports of this series, are based not upon facts or authenticated figures cited by way of correction of the statistics and estimates of this Bureau, but simply, as I shall take occasion to point out, upon mere prepossessions or opinions.

It would be curious to exhibit in contrast excerpts from some of the published criticisms upon any given report of the present series, especially upon the annual estimates of this Bureau of the coin circulation of the United States. Such criticisms divide themselves on the one hand into the number that contend for a stock of gold larger than its computation by this Bureau with less allowance for consumption of gold coin in the arts, and those, on the other hand, that contend for a smaller stock of gold with a larger allowance for consumption. Between such contentions the Bureau of the Mint seems to occupy middle ground.

As long as Congress imposes upon him the extra and arduous duty of informing it upon the annual production of the precious metals in the United States, the Director of the Mint, it seems to me, is bound to exercise the utmost freedom of opinion in the matter of estimates and to divest himself of all obligation to carry along existing totals in whose composition errors have been discovered. For this reason the last statements, rather than the preceding ones, should be taken, and the Bureau held to account only for its latest work. The Bureau of the Mint, it should be understood, is called upon by Congress to evolve something like annual statistics out of a study of the production of the precious metals from material only in part of a strictly statistical character, and without providing by law for the supply of industrial returns from producers and consumers of the precious metals.

On this fact rests, as I conceive, a strong claim on the part of this Bureau to such consideration from Congress and the public as an acceptance of this report simply as a conscientious effort to arrange whatever material can be found available as a result of such study and direct inquiry, so as to approach, as far as practicable, to the statistical method of presentation. Impressed as I am with the scientific character of statistics properly so called, this at least is all that can be claimed for the present report.

The provision of law for the present series of reports to Congress upon the production of the precious metals is still only by annual appropriation contained in the legislative, judicial, and executive bill. An appropriation to the Bureau of the Mint has been made for the year 1886 as estimated. Believing, however, that the annual fiscal report of this Bureau to the Secretary of the Treasury affords, by means of its usual appendices, whatever opportunities it may not, in my opinion, advantageously forego for the presentation of statements of production of the precious metals in the United States, I have to invite the consideration of Congress to such a modification of the usual requirements in the matter of the publication of the Report upon the

Production of the Precious Metals by the Director of the Mint as will dispense with a special volume upon this subject.

Conforming strictly to the requirements of the usual appropriation for the contingent expenses of the Bureau of the Mint in so far as relates to the provision for the collection of the statistics of the production of the precious metals in the United States, as understood by me, the duty of the Director of the Mint in carrying out this provision is strictly limited to the collection of the statistics of the production of the precious metals and a report of the same to Congress.

Whatever may have been the precedents of this Bureau, or by warrant of precedents whatever may be the extension of the present report beyond the strict requirements of the act of appropriation, I do not at present foresee the necessity of an extension of any subsequent report beyond the narrow limits of a few octavo pages, which can, in my opinion, without any inconvenience, be appended to the fiscal report of the Director of the Mint, even though the treatment of the subject be in terms of calendar years instead of fiscal years. Such a proposed reduction of the bulk of the material, as compared with previous reports of the present series, will be attended with greatly reduced cost of publication, while for all useful purposes an enlarged edition of the report of the Director of the Mint for the fiscal year will stand in good stead for the special publication, of which 9,000 copies have usually been ordered by Congress to be printed.

So great is the interest on the part of citizens of the United States in the subject of the production of the precious metals in our neighboring republic, that in the same wide discretion heretofore exercised by the Director of the Mint as to the selection of material for the present series of reports, I have felt warranted in appending a statement of the production of gold and silver in Mexico for its fiscal year ended June 30, 1885, from official documents of which this Bureau is regularly in receipt through the courtesy of that Government. The propriety of this addendum to the present report will not be questioned when it is considered that the great deposits of the precious metals in the Mexican cordilleras occur under conditions geologically as well as geographically consecutive, and in some respects continuous, with the more notable deposits in the United States.

The editorial and statistical labors of this report have been shared with Mr. E. O. Leech, of the Bureau of the Mint, Computer of Bullion. Much extra work in the clerical preparation of the volume has been imposed on the whole staff of the Bureau, and has been faithfully and cheerfully executed by all.

Very respectfully,

JAMES P. KIMBALL,

Director of the Mint.

Hon. DANIEL MANNING,

Secretary of the Treasury.

CONTENTS.

	Page.
LETTER OF TRANSMITTAL	5
PART I.—GENERAL REPORT	13
Production of gold.....	14
Production of silver ..	19
Production and distribution by States and Territories.....	27
Details of the distribution by States and Territories	30
Comparison with 1884	37
Deposits and purchases of gold and silver.....	38
Output of gold and silver coin and bars by the mints and assay offices	38
Imports and exports of bullion and coin	39
Work of private refineries	40
Estimates of production	42
Consumption of gold and silver in the industrial arts	47
Coin circulation of the United States	65
Depreciation or waste of the precious metals through wear of coins.....	86
PART II.—PRODUCTION OF STATES AND TERRITORIES.....	119
CHAPTER I.—Arizona	121
II.—California	124
III.—Colorado	133
IV.—Dakota	139
V.—Idaho	143
VI.—Montana	150
VII.—Nevada	159
VIII.—New Mexico.....	164
IX.—Oregon.....	175
X.—Utah.....	178
XI.—Washington Territory.....	183
XII.—Mines of the Appalachian range	185
PART III.—GENERAL STATISTICS	
I.—Deposits and purchases of gold and silver by weight during the calendar year 1885.....	196
II.—Deposits and purchases of gold and silver by value during the calendar year 1885	198
III.—Deposits of unrefined gold of domestic production by weight during the calendar year 1885.....	200
IV.—Deposits of unrefined silver of domestic production by weight during the calendar year 1885	202
V.—Deposits of unrefined gold of domestic production by value dur- ing the calendar year 1885.....	204
VI.—Deposits of unrefined silver of domestic production by value during the calendar year 1885	206
VII.—Coinage during the calendar year 1885.....	208
VIII.—Bars manufactured during the calendar year 1885, by weight..	210

	Page.
CHAPTER IX.—Bars manufactured during the calendar year 1885, by value...	210
X.—Imports and exports of gold and silver during the calendar year 1885	212-218
XI.—Gold and silver operated upon by the refineries of the mints and assay offices during the calendar year 1885.....	219
XII.—Imports and exports of gold and silver during the calendar year 1885 at the port of San Francisco	220
XIII.—Average monthly price of silver during the calendar year 1885.	221
XIV.—Silver purchased during the calendar year 1885	221
XV.—Silver purchased by months during the calendar year 1885	222
XVI.—Silver consumed in coinage each month during the calendar year 1885	222
XVII.—Silver manufactured into dollars, and wastage and loss during the calendar year 1885	224
XVIII.—Assets and liabilities of the United States mints and assay offices, December 31, 1885.....	226
XIX.—Unrefined gold and silver of domestic production deposited at the mints and assay offices to the close of the calendar year 1885.	228
XX.—Production of gold and silver in the United States annually from the organization of the Mint.....	229
XXI.—Statement of coinage of the mints of the United States by denominations of pieces from the organization of the Mint.....	230-245
XXII.—Annual statement of Mr. Valentine of the production of the United States	246-249
XXIII.—Estimate of the values of foreign coins, January 1, 1886	250-251
XXIV.—Coinage, imports, and exports of trade dollars	252-254
XXV.—Nickel coinage of the United States during the calendar year 1885	255
XXVI.—The world's production of gold and silver for 1882, '83, and '84.	256
XXVII.—Coinages of various countries for 1882, '83, and '84	258
XXVIII.—Deposit of gold and silver bullion at the Assay Office at New York for bars for use in the arts.....	259
XXIX.—Prices of commodities, 1845-1850, compared with 1880 and subsequent years.....	260
XXX.—Prices of commodities, 1870-1872, compared with 1880 and subsequent years.....	262
XXXI.—Ratio of silver to gold each year since 1687.....	264
XXXII.—Highest, lowest, and average price of silver each year since 1833	265
XXXIII.—Bullion value of the silver dollar each year from 1873 to 1885..	266
XXXIV.—Gold and silver articles stamped in France during 1885.....	267
XXXV.—Coinage of Belgium each year since 1832	268
XXXVI.—Articles imported into France and exportation of old jewelry during 1885.....	270
XXXVII.—Gold and silver submitted to duty and exported from 1860 to 1882 in France.....	271
XXXVIII.—Production of gold and silver in the world, 1885	272
PART IV.—MISCELLANEOUS. (CONTRIBUTED.)	
I.—Parting gold and silver at the United States assay office at New York City, by Andrew Mason.....	275-281
II.—Iridium in mint deposits, by B. T. Martin.....	282-286
PART V.—PRODUCTION OF MEXICO	289-305

PART I.

GENERAL REPORT.

GENERAL REPORT.

PRODUCTION OF GOLD.

Such are the facilities afforded by the several mints and assay offices of the United States to producers of gold bullion throughout the country for its prompt conversion into coin or bars, that, as there is every reason to conclude, substantially the whole production eventually reaches these institutions as deposits. It is also safe to conclude that such deposits follow closely upon production. The production of gold, therefore, from the mines of the United States is susceptible of accurate enough estimation for any given period from the records of the institutions under the jurisdiction of the Bureau of the Mint.

Nearly the whole amount of gold handled by private refineries eventually reaches the mints, and is thus finally taken up on the records of this Bureau. A variable and heretofore unknown amount corresponds to bars of domestic gold issued by private refineries and directly sold to manufacturers and dealers. This amount has been approximately ascertained for 1885, however, by information derived from private refineries. From the fact that no charge is imposed by the mint for converting bullion into coin, while the charges for refining base bullion and for parting alloys of gold and silver are not above those of private refineries, preference is generally given by producers to the several institutions forming the mint service of the Government, for the sake of the official stamp and the official responsibility attached to all public work of this kind. The amount of new gold eventually deposited for coinage or for conversion into stamped United States bars is practically diminished only by fugitive quantities which go into the hands of such manufacturers and shippers as are local patrons of private refineries. No allowance will be made for, nor consideration here be given to, nuggets or other specimens which are for a time preserved or which go into permanent mineralogical collections, as not only probably inconsiderable in value, but because their destination is eventually the same in case they finally go into economic use, while the average from year to year would probably be about the same, and therefore about equally affect the estimates of production for different years.

The act of June 19, 1878, extended to the smaller United States assay offices the provisions of section 3545 of the Revised Statutes, imposing on the Secretary of the Treasury the duty of keeping in the several coinage mints and assay office at New York, "when the state of the Treasury shall admit thereof, such an amount of money or bullion,

procured for the purpose, as he shall judge convenient and necessary, out of which those who bring bullion to the said mints and assay office may be paid the value thereof, in coin or bars, as soon as practicable after the value has been ascertained," the bullion so deposited then becoming the property of the United States. This original provision, and its further application (under par. 9, chap. 329, p. 379, vol. I, Sup. R. S.), was specifically for the purpose of enabling the mints and the several assay offices to make returns to depositors with as little delay as possible. The fund applied accordingly to this purpose is a part of the general balance in the Treasury of the United States, and is technically known as the "bullion fund."

The effect of this legislation was to enable depositors to receive coin for their deposits at any of the smaller assay offices, a right which prior to that act was available only at the coinage mints and the assay office at New York. The act of May 26, 1882, authorized the exchange of gold bars for United States gold coin at the mints and assay office at New York, in sums of not less than \$5,000.

In consequence of these benefits it is but natural that the gold product of the country should find its way to the national mints and assay offices.

An examination of the official statement of imports and exports for the calendar year 1885 shows that the total value of the gold bullion exported during that year was \$845,448, of which \$705,108 was of domestic production and \$140,340 of foreign bullion.

Of the export of domestic gold bullion (\$705,108), the sum of \$599,737 consisted of United States mint or assay-office bars, leaving an excess for 1885 of domestic gold bullion amounting to the small sum of \$105,371, and corresponding to the amount which did not find its way to the mints and assay offices of the United States, but was directly exported.

The unrefined gold deposited at the mints and assay offices during the calendar year named was 850,863.802 standard ounces, valued at \$15,830,024, and of refined bullion of domestic production 809,644.872 standard ounces, valued at \$15,063,160, a total of 1,660,508.674 standard ounces, valued at \$30,893,184.63. This is exclusive of United States mint or assay-office bars redeposited, and hence known as "redeposits."

This corresponds almost exactly with the amount deposited during the calendar year 1884, which amounted to \$30,807,200. The custom-house returns for the calendar year 1884 showed an export of only \$115,963 of domestic gold bullion other than United States mint or assay-office gold bars.

The imports of gold bullion are reported by the custom-houses to have been, during the calendar year 1885, \$3,676,091. The deposits of bullion at the mints and assay offices classified as foreign amounted during the same year to 217,214.039 standard ounces, valued at \$4,041,191.42. From the fact that the mints and assay offices report an excess of \$365,100 of foreign bullion deposited, it is clear that substantially all of the foreign bullion imported has reached these institutions, and that therefore none

has been included in the present estimate of domestic production. This is obviously the case unless, what seems quite improbable, a considerable amount of foreign bullion has been wrongly classified by the mints and assay offices as of domestic production. If the excess were on the other side there might be some grounds for a question as to the proper classification.

It seems a reasonable supposition that the small excess of deposits over manifested imports of foreign bullion is to be accounted for from receipts of gold from British Columbia and Canada without entry at custom-houses, and from a tenor of gold in Mexican silver deposited at the mints. As remarked in my annual report for the fiscal year, gold is believed to pass from the Dominion of Canada, including British Columbia, into the United States otherwise than through the custom-houses. This probability is indicated by the fact that the northern frontier is scantily supplied with custom-houses, and also by the fact that, as compared with Canada, facilities are offered to the public for the conversion of bullion into coin in the United States, such as are not afforded in that dominion.

Thus it appears that unless there has been a failure, first, on the part of the custom-houses in the registration of foreign bullion entering the country; and second, on the part of the mints and assay offices to properly classify as such foreign bullion deposited; and still further unless a coincident failure on the part of both branches of the Government accordingly has occurred; the deposits of gold at the mints and assay offices classified as domestic practically represent, to the exclusion of any considerable amount of foreign production, the product of the country, except the small part which has been directly exported (namely, \$105,371), together with what little has gone into direct consumption without reaching the mints and assay offices. The latter is reported by private refineries as amounting during the year 1885 to \$1,272,606.

The deposits of unrefined gold at the mints and assay offices have fallen off considerably from 1884. The deposits of unrefined gold during that year amounted to \$18,362,769, against \$15,830,024 in 1885, while the deposits of refined gold amounted during the first-named year to \$12,444,432, against \$15,063,160 in 1885. This indicates that a larger proportion of the production of the country has gone to private refineries for treatment than to the refineries of the mint service.

This is doubtless, at least partially, due to the fact that on May 30, 1885, orders were issued by the Department withdrawing the cash funds from the mint at Carson and the smaller assay offices for the payment of deposits, and requiring their payment by draft on the assistant treasurers at San Francisco and New York, and also charging depositors with the cost of transportation to the coinage mints on bullion deposited for coin. As a general rule, however, the private shipper is at an advantage over the Government in obtaining favorable special rates on the transportation of bullion,

This expedient has had the effect of lessening the advantage previously offered to producers of small amounts of bullion by the mint at Carson and the smaller assay offices over the facilities offered by private refineries. It is believed that the falling off in the deposits of unrefined bullion on the part of the mints and assay offices is made up by increased business on the part of private refineries, the production of which, as above shown, eventually reaches the mints as refined bars.

Estimating \$1,300,000 as the amount of gold not deposited at the mints and assay offices, but used in the form of bars from private refineries and entering into direct consumption in the arts and in ornamentation, &c., together with some small amount of gold contained in silver bullion exported for treatment, the production of gold in the United States may be placed at about \$31,800,000, which is \$1,000,000 in excess of the estimate of Director Burchard for the calendar year 1884.

ELEMENTS OF THE ESTIMATE OF GOLD PRODUCTION 1885.	
Bullion deposited at mints, &c., classified as of domestic production	\$30, 893, 184
Bullion classified as of domestic production exported, other than United States mint or assay-office bars.	105, 371
Bullion classified as of domestic production, reported by 30 leading private refineries as having been furnished manufacturers in 1885*.....	1, 272, 606
Total.....	32, 271, 161
Deduct—	
Foreign gold contained in refined bars from Selby refinery, classified at San Francisco mint as domestic	450, 000
Estimated production	31, 821, 161
* Composing all of importance and out of 37 addressed.	

The estimate of the product of the United States for 1885, published by Mr. John J. Valentine, of Wells, Fargo & Co., based on the business of express companies and other public carriers, places the production of gold at \$26,393,756, an increase of a little over \$1,200,000 above the estimate of the same gentleman for 1884.

The increased production estimated by Mr. Valentine as compared with his estimate for last year is about the same as the increase shown by the estimates of this Bureau for the same period.

This valuable contribution to the statistics of the precious metals, which has been continued for a number of years past, exhibits in detail the shipments from the various producing states and territories west of the Missouri River of gold dust and bullion by express and by other conveyance, of silver bullion by express, and of ores and base bullion by freight.

It is well understood that the estimate of Mr. Valentine does not embrace the entire production of the country, nor does it embrace the entire production of the states and territories west of the Missouri

River. This is evident from the fact that large amounts, especially of gold and also of silver, are brought to the mints and assay offices directly from the mines producing these metals by mine owners or agents, and are handled neither by express companies nor by other common carriers. It is also well known that shippers of bullion are, as a matter of business, prone to place low valuations upon their shipments in favor of rates of freight. This is made almost certain from the fact that in the statements drawn from their books, furnished this Bureau in previous years by the leading railroads of the United States over which ore and base bullion are shipped, the value in nearly all cases is estimated at a round figure, say \$100 per ton.

The values given by shippers to the express companies and railroads from which Mr. Valentine's estimates of value are taken, must be understood to represent values short of their ultimate value. Mr. Valentine's mode of determining the value of silver transported is to a still greater extent subject to allowances for errors in conjectural estimates of pure metal from manifests of base metal and selected ores and concentrates, expressed as they generally are in terms favorable to the shipper.

PRODUCTION OF SILVER.

In the same sense that the mints and assay offices of the United States are open to deposits of gold bullion, none of these institutions are open to deposits of silver. For while returns may be made to the depositor of gold bullion either in coin or stamped and refined bars, depositors of silver bullion can receive in return bars of the same metal only; that is, bars of unparted, fine, sterling or standard metal at the option of the depositor.

The Government is the purchaser of silver for the specific requirements of the coinage laws, stated semi-weekly purchases of fine silver being made by this Department upon competitive offers by telegraph. Purchases are also made at the mints at Philadelphia and New Orleans in lots of less than 10,000 ounces within limits fixed from time to time by the Director of the Mint to correspond with its market value.

Doré silver, or silver containing gold, is also purchased at the coinage mints for the technical requirements of their acid refineries; while silver contained in gold deposits, being allowed for, is practically purchased by all the institutions.

The whole of the silver production of the United States does not, therefore, as substantially in the case of gold, reach the mints and assay offices. Better facilities indeed are afforded by private refineries in the United States, the aggregate output of which practically represents at present about seven-eighths of the total production of this metal in the country, as will presently be shown.

If this output be ascertained, and to it be added the receipts of un-

refined bullion by the mints and assay offices as well as exports of silver bullion, including concentrates of silver reported by the custom-houses as bullion, we shall be possessed of the means of an estimate of the production of silver almost as correct as the estimate of the production of gold. The proportion of the silver received at the mints and assay offices which had not passed through private refineries, it will be seen, amounted to about one-eighth of the production as estimated from all sources. As will presently be shown, 21,704,919 standard ounces of silver of the coining value of \$25,256,633, and bearing the stamps of private refineries, was received at the mints on account of purchases for coinage, except \$879,761 deposited for bars at the assay office at New York.

The depreciation in the market value of silver has occasioned so many different valuations that it is difficult to form a correct estimate of the number of ounces produced.

The collector of customs at New York informs the Bureau that the silver bullion imported and exported at that port is manifested and reported at its commercial value. This is doubtless the case at the other ports of entry of the United States.

Reports from the large silver-producing districts, such as Colorado, Arizona, Utah, New Mexico, &c., are also generally expressed in terms of market value. The rate used at the mints for statistical purposes, and in the reports of this Bureau, is the coining value of silver in silver dollars, $\$1.16\frac{4}{11}$ per standard ounce, or \$1.2929 per ounce fine, while the commercial value of silver at the present writing is about \$1.01 per ounce fine. Here is a difference of 28 cents per ounce, equal to more than one-fourth of the commercial value of an ounce, for which allowance must be made in dealing with the exportation and importation of silver bullion reported by the custom-houses, and with the production as reported from the mines and reduction works and refineries and by shipping agents.

The deposits and purchases of unrefined silver bullion classified at the mints of the United States as of domestic production during the calendar year 1885 amounted to 5,426,201 ounces of standard fineness, valued at the coining rate of silver \$6,314,124. The refined silver deposited and purchased during the same period amounted to 21,704,919 standard ounces, valued at \$25,256,633, making the total weight and value of the domestic silver bullion received at the mints during the year named 27,131,120 standard ounces, valued at \$31,570,758. In addition to this, the statement of imports and exports shows that silver bullion of domestic production was exported during the year valued at \$20,849,612, of which \$1,425,732 consisted of United States mint or assay office bars; so that the value of the bullion of domestic production exported other than that which had been deposited at the mints and assay offices amounted during the year to \$19,423,880 at its current commercial value from day to day. It will be understood,

as stated, that this latter is estimated at its monthly average commercial value for the calendar year, which for 1885 may be stated at \$1.06½ per ounce fine.

In order to ascertain the coining value of the same it will be necessary to divide the amount of silver other than United States bars exported each month by the average monthly parity of silver at daily rates of exchange and London prices for ounces fine, which multiplied by the coining rate of silver (\$1.2929) will give the coining value of the silver exported other than United States bars.

This is done for the sake of a closer computation of the value of exported domestic silver than would be obtained by taking the average price as determined by year instead of by month, and in order to report the valuation of this important item in the total estimate of silver production in the same terms as employed in this report for the rest of it, viz, the United States coining rate.

Under the present condition of the silver market care should always be taken to distinguish between the several valuations of silver as differently employed in estimates by different authorities. Thus the rates used by Mr. Valentine in his valuable tabulations are the same as used by shippers, and although understood to be commercial, are not uniformly strictly such.

The weight and value of the bullion exported which had not reached the mints and assay offices may be stated at 18,222,374 ounces of fine silver, equal at the coining rate to \$23,559,602.

In this report generally the commercial value of silver will be taken at \$1.06½ per troy ounce fine, against \$1.2929 its standard or coin value.

The statement of imports shows the value of the silver bullion imported into the United States during the year 1885 to have been \$4,646,818. At the average commercial rate of silver for the year, this amounted to 4,363,209 fine ounces, equal at the coining value of silver to \$5,641,192. Of the silver bullion imported, \$2,770,136 (equal at its coining rate to \$3,362,919) consisted of "bars," and \$1,876,682 (equal at its coining value to \$2,227,827) of "other bullion."

The amount of silver bullion deposited at the mints and assay offices during the year, classified as foreign, amounted only to 1,525,739.18 standard ounces, valued at \$1,775,405.58. The difference, \$3,865,786, between the amount of silver bullion deposited at the mints, classified as foreign, and the amount of manifested foreign silver bullion imported into the United States, probably went to the mints in the form of refined bars, without discrimination as such, and was included along with returns of domestic silver. This is indicated from information received from private refineries of their operations, tending to show the derivation of considerable quantities of silver from foreign sources, in the form, it is supposed, chiefly of ores and concentrates, and from the additional fact that of the imported silver \$2,227,827, as stated, consisted of bullion other than

“bars,” which naturally would go somewhere for refining; and as the receipts of foreign silver bullion at the mints, classified as such, did not equal the value of the silver “bars” imported, it is almost certain that the “other bullion” imported went to private refineries.

Discrimination at private refineries between foreign and domestic sources of supply is seldom made, and never between bars as made up of different material.

All deposits and purchases of refinery bars bearing the stamps of private works in the United States are therefore necessarily classified at the mints and assay offices as domestic bullion.

The statement of imports and exports at the port of San Francisco, moreover, shows the importation from Mexico during the year of silver bullion valued at \$1,780,291, or, say, at its coining rate, \$2,000,000. This item alone is more than the total deposits classified as foreign silver bullion at the mints and assay offices.

It is evident, indeed, that at least \$3,865,786 worth of foreign silver bullion reached the mints and assay offices in the shape of refined silver, and was classified as of domestic production.

Taking, therefore, the \$31,570,758 worth of silver bullion, exclusive of redeposits, deposited at the mints and assay offices during the calendar year 1885, classified as domestic, and deducting from the same the sum of \$3,865,786 as foreign bullion, which, for reasons above explained, was classified as domestic, would leave, corresponding to the net deposits and purchases of domestic silver bullion at the mints and assay offices during the year 1885, \$27,704,972. To this is to be added the value at its coining rate of the silver bullion exported during the year classified as of domestic production other than United States mint or refinery bars, which, as stated, amounted to \$23,559,602.

The production of silver in the United States during the calendar year 1885, reckoned at its coin value in silver dollars, is thus found to have been equal to \$51,264,574.

This estimate will be further slightly increased by an addition for domestic silver used in the arts, in the shape of bars prepared by private refineries.

The reports to this Bureau by private refineries of the value of the silver in bars furnished by them during the calendar year 1885 to persons and firms engaged in the arts and manufactures show a consumption amounting to \$530,828, of which \$395,238 was of domestic bullion.

It seems probable that an addition of \$400,000 for this consumption would be sufficient.

ESTIMATE OF THE PRODUCTION OF SILVER IN THE UNITED STATES DURING THE CALENDAR YEAR 1885.

Production.	Amount.
Deposits at mints and assay offices classified as domestic.....	\$31, 570, 758
Exports classified as domestic, other than United States mint or assay office bars, at monthly average parity of London rates reduced to coining value.....	23, 559, 602
Domestic bullion reported by private refineries as made into bars for persons and firms engaged in the arts and ornamentation.....	395, 238
Total	55, 525, 598
Deduct—	
Excess of imports of foreign silver bullion, classified as such at the custom-houses, over the foreign silver bullion deposited at the mints, classified as such.	3, 865, 786
Estimated production.....	51, 659, 812

The value of the production of silver from the mines of the United States during the calendar year, estimated at its coining value in silver dollars, may be stated in round numbers to have been about \$51,600,000, against \$48,800,000 for the calendar year 1884, an increase of \$2,800,000 worth of silver during the calendar year 1885.

The commercial value of the silver product of the country was \$42,504,447, reckoning the commercial price of silver for the calendar year at \$1.065 per ounce fine, which was the average price at current exchange.

Mr. Valentine estimates the production in the states and territories of the United States west of the Missouri river to have been \$44,516,599.

It is generally understood that the estimate of Mr. Valentine is based upon the commercial value of silver. Indeed, as obligingly stated by Mr. Valentine to this Bureau, it is impracticable to determine in all cases at what value shipments of silver are manifested by express and upon which valuation his estimate is based. Though generally meant to be approximated to commercial rates of silver at which it is undertaken to manifest all shipments of silver ores and bullion from mining regions, such values in point of fact are taken without observance of immediate market fluctuations in the value of silver. Taking the average market value of silver for the calendar year 1885 at \$1.06½ per ounce fine, as by daily quotations to the Bureau of the Mint, the production corresponding to Mr. Valentine's estimate of values would be about 41,780,000 fine ounces, equal at the coining rate of silver to about \$54,000,000 against its commercial value, \$44,516,599, as given by Mr. Valentine.

According to Mr. Valentine's statement, the production of silver, based upon manifested rates of valuation, increased from \$43,529,925 in 1884 to \$44,516,599 in 1885, an increase of over \$1,000,000, or, at its coining rate, about \$1,300,000.

Considering the plan adopted in Mr. Valentine's statement, this is in as close agreement as can be expected with the estimate of this Bureau of \$51,000,000 as the production of silver from the mines of the United States during the calendar year 1885.

It does not seem that a sufficient allowance has been made by Mr. Valentine for the value of gold contained in silver bullion shipped by express and not separately stated or itemized in manifests. The total value of such shipments as stated in his circular, exclusive of silver from Mexico, was during the year \$27,445,971. Just what proportion of this was gold is not evident from his statement, and at time of shipment and before refining obviously could not be ascertained. The value of the gold dust and gold bullion shipped by express and other conveyance, exclusive of the product of Mexico and British Columbia, was, according to his figures, \$24,153,700. This deducted from his estimate of the production of gold in the United States west of the Missouri river, \$26,393,756, leaves \$2,240,056, corresponding to what has been apparently allowed by him for gold contained in silver bullion shipped by express and in ores and base bullion by freight. This inference appears to be borne out by the additional fact that the estimate of the western silver production by Mr. Valentine for the year 1885 is, at its approximate commercial value, \$2,000,000 in excess of the estimate of this Bureau. If, now, this excess of \$2,000,000, which was probably included in the value of the silver bullion shipped by express, be added to the gold product as given by him, the division between the gold and silver product of the country west of the Missouri river will then more nearly approximate the estimate of the production of the precious metals for the same territory by this Bureau as deduced from the official returns of the Mint and customs services, and from supplementary information in the line of special inquiry.

The distribution among the various states and territories of the total production of the country as returned or estimated is far more difficult to ascertain than the aggregate production of the country. Reports have been received at this Bureau from the principal refineries of the United States, stating the sources from which they obtained their product for the year.

The mints and assay offices are required to classify their deposits and purchases of bullion among the various states and territories producing the same. The distribution of the aggregate between the several states and territories has been reached by these two means in conjunction with reports of the agents designated by this Bureau to compile the statistics of the production of the various mining sections of the country. The product of the country for the calendar year 1885, as distributed accordingly among the states and territories producing the same, was as follows:

APPROXIMATE DISTRIBUTION IN ROUND NUMBERS, BY STATES AND TERRITORIES, OF THE ESTIMATED TOTAL PRODUCTION OF PRECIOUS METALS IN THE UNITED STATES FOR 1885.*

State or Territory.	Gold.	Silver.	Total.
Alaska	\$300,000	\$2,000	\$302,000
Arizona	880,000	3,800,000	4,680,000
California	12,700,000	2,500,000	15,200,000
Colorado	4,200,000	15,800,000	20,000,000
Dakota	3,200,000	100,000	3,300,000
Georgia	136,000	.....	136,000
Idaho	1,800,000	3,500,000	5,300,000
Montana	3,300,000	10,060,000	13,360,000
Nevada	3,100,000	6,000,000	9,100,000
New Mexico	800,000	3,000,000	3,800,000
North Carolina	152,000	3,000	155,000
Oregon	800,000	10,000	810,000
South Carolina	43,000	.....	43,000
Utah	180,000	6,750,000	6,930,000
Washington	120,000	70,000	190,000
Texas, Alabama, Tennessee, Virginia, Vermont, Michigan, and Wyoming	90,000	5,000	95,000
Total.....	31,801,000	51,600,000	83,401,000

* The estimate of total production being by the regular method of the Bureau of the Mint, as fully explained in the text.

ESTIMATE OF SAME BY MINT OFFICERS AND AGENTS, 1885.

State or Territory.	Gold.	Silver.	Total.
Alaska	\$280,000	\$2,000	\$282,000
Arizona	886,000	3,825,000	4,711,000
California	12,661,000	2,568,000	15,229,000
Colorado	4,200,000	16,000,000	20,200,000
Dakota	3,150,000	150,000	3,300,000
Georgia	136,500	.....	136,500
Idaho	1,837,000	4,200,000	6,037,000
Montana	3,400,000	11,500,000	14,900,000
Nevada	3,084,000	6,229,000	9,313,000
New Mexico	806,500	3,023,500	3,830,000
North Carolina	152,000	2,750	154,750
Oregon	750,000	.....	750,000
South Carolina	43,000	.....	43,000
Utah	187,000	7,733,000	7,920,800
Washington	126,000	67,500	193,500
Texas, Alabama, Tennessee, Virginia, Vermont, and Michigan	80,000	5,000	85,000
Total.....	31,779,000	55,355,750	87,134,000

In view of the rapid decline which has taken place in the commercial value of silver since the demonetization of silver by Germany, and especially during the last year, the question is often asked, "What will be the effect of this decline on the production of silver in the United States?"

In considering this question it is important to remember that the conditions of supply are, in the case of the precious metals, not so dependent upon conditions of demand as with most if not all other common staples of industry. The truth of this proposition rests upon collateral conditions which have previously existed and now prevail. What might be the case under hypothetical conditions of a different kind may, without argument here, be left to conjecture.

It is well known that a large part of the silver production of the United States is practically a by-product, incidental to the production of gold and the baser metals. From the value of the silver thus produced the fall in price is a serious one. The tendency of such a fall will necessarily be to sweep away the margin of profit from some of the operations of this kind, important, if indeed not vital, to the existence of certain reduction and smelting industries. In cases where the extraction of silver is alone for the sake of its recovery and not for the amelioration of the associated metal or metals, a check to production must follow from a certain fall in price, even if disguised by increased production from other sources incidental to progressive development or to new undertakings in mines and reduction works.

A considerable proportion of the total production of silver corresponds to the precarious production of transient mines supported for a while by outlay or capital. Upon the exhaustion of capital they soon cease, for the time being, to be producers if without net resources of their own. Under the incentive of hope and of the imagination mines are often worked at a loss for a time, and perhaps under different ventures even repeatedly, sometimes, however, without failing to contribute, collectively at least, a considerable proportion of the total production of the precious metals.

Whatever from without tends to lessen the quantity or value of the product of such mines, or rather mining ventures, tends also to lessen their ability to withstand the effects of failure within. Hence the recent fall in the price of silver tends to reduce the number of mines whose maintenance be only partly by means of their production, and whose further reliance be upon other assets, like advances and assessments of capital. Another tendency will be to discourage new silver mining ventures, with the probable effect of turning the attention of miners of the precious metals from the poorer to the richer ores, and from regions less favored in the quality of ores to others holding out the promise of ores of the higher grades, even though the quest for the latter pass beyond our own borders into Mexico and elsewhere.

PRODUCTION AND DISTRIBUTION BY STATES AND TERRITORIES.

The estimate by the Bureau of the Mint of the production of the precious metals by the regular method adopted by the bureau, as previously explained in the text, remains now to be supplemented by an approximate estimate of the distribution of the same by states and territories.

It will be understood that the estimate of the total production is only incidentally with reference to geographical distribution. Statements by the mints and assay offices and by the custom-houses of their transactions, employed for the estimate for total production, are only imperfectly and partially so divided as to afford little more than a clue, and this indeed only in certain cases, to the proper geographical distribution of the aggregates. So, too, with allowances made for consumption in the arts, the estimate for this addition resting upon most carefully considered precedents for this purpose.

While, as already explained, the total production, as thus estimated from official sources, is open to little or no doubt as to its close approximation to fact, it is, on the other hand, a matter of much difficulty and uncertainty when the estimated total comes to be distributed among the several producing states and territories according to their individual production.

The estimate given has been made up from the classification of deposits of unrefined bullion at the mints and assay offices, from information derived from private refineries, and supplemented by special reports for single states and territories at the hands of officers in the mint service and of gentlemen selected for the purpose on account of their local knowledge and means of information. Supplementary information has been derived from the published reports and statements of mining companies. I am unfortunately unable to publish this information in detail and as employed for the purposes of the estimate of geographical distribution, because it is largely based upon returns of private refineries and mining companies which were contributed upon the condition proffered by myself that the details of private business concerns, if furnished, would be used only in the composition of aggregates, and would otherwise be regarded as confidential.

The estimate of approximate distribution by states and territories, as published, has been carefully made up with reference to all the facts in the possession of this Bureau. It is believed that it affords a fair exhibit of the production of the precious metals by the several states and territories, within a close margin of the total but within which a shortage of one or two millions may have occurred, as will now be explained.

While the facts as to the distribution of gold production are open to little or no question, it appears that the aggregate estimates of produc-

tion of silver by states and territories, reached by adopting without change the returns of the several special agents employed for the several districts, are somewhat in excess of the Bureau's regular estimate of the aggregate production of the United States. Although there is every reason to believe that due care and vigilance have been exercised by the several statistical agents of the Bureau, it must be concluded that either the regular estimate of the Bureau falls short of the total production of the precious metals of the United States for the calendar year 1885, or else that the estimates and returns on the part of its special agents, as commissioned for the several mining districts of the country, are in excess in some instances of the actual production.

The estimates of the agents employed by this Bureau and of the officers in charge of mints and assay offices are based in some cases very largely upon the reports of the owners of mining properties as to the amount of their production, and in other cases more or less upon estimates and allowances for unreported mines known to have produced. These estimates therefore are not considered, and cannot be considered by this Bureau, as strictly accurate, nor the totals wherein they enter. The estimate of the Bureau of the total production of the country is, on the contrary, made on an entirely different basis, and from positive data and estimates into which reports of production at the hands of mine owners do not all enter.

Attention has been called to the estimates by states and territories in one or two instances which seemed to me to be open to question; but as in each case the original estimate was afterwards confirmed, there seems nothing for it but to conclude that the aggregate production of the United States lies somewhere between the two estimates reached by this Bureau by the two separate and entirely different lines of inquiry adopted.

It may be well, however, to refer to the general tendency on the part of private enterprises to exhibit to the public their transactions in the most favorable light. Errors of the personal equation, to which I have found occasion to refer, is a matter of considerable importance in the collation for state purposes of non-compulsory reports of private business, and must naturally be supposed to fall chiefly upon the non-official estimate as compared with the official estimate by this Bureau. For this reason I have not taken the mean of the two estimates, but have preferred to present the two estimates each by itself. This course, it seems to me, is the better for several reasons.

First, it may be considered that any stock of silver on hand by mines and private refineries at the close of the year would be reported by producers, yet fail to be taken up in the official estimates of this Bureau until reaching the institutions under its jurisdiction or passing the custom-houses for export. Favorable conditions of common labor are known to promote the movement of silver to a very appreciable extent. It is also well known that the movement of silver during the

winter months is generally greatly impeded by vicissitudes of the weather. The wide-spread labor agitation of the autumn and winter months probably retarded more than usual the free movement of silver toward the end of the preceding year, and perhaps to such an extent as to largely account for the discrepancy between the production for 1885 claimed, and the total amount reaching the several institutions of the mint service and passing the custom-houses during the same period. The detention of silver bullion in the hands of the producers might, it is easily conceived under the circumstances mentioned, be something more than the average for any given season for different years. Toward the close of the last calendar year there seems, indeed, to have been a conjunction of unfavorable circumstances which might have tended to the retention of a considerable stock of silver ores, amalgams and crude bullion in the hands of producers, and to the tardy delivery of such products for refining. The exportation of fine bars would in the same measure also be delayed.

In the second place, the presentation of both tables will afford means to those who are specially informed upon the subject for considering the several items as presented, and thus through examination and criticism open the way for the detection of error, should any error have occurred.

It will be obvious that between the returns of production of precious metals, as obtained directly from the mines, from statements of transportation concerns and from metallurgical establishments, and the returns obtained of the output of refined metal by the mints and assay offices, together with the net exports over imports of bullion, a *bona fide* discrepancy must occur corresponding to the waste of the precious metals in the several metallurgical and chemical processes of melting and refining and of parting, and in the mechanical processes of manufacture into coin. What the sum of the average of the actual wastage amounts to in the operations of the several mints and assay offices is difficult to determine, as the wastage actually sustained at these institutions is more or less compensated by allowances made in its favor in receipts from depositors in order to cover the risks incurred in certain deposits especially liable to excessive wastage in melting and refining.

Attention is here simply called to the fact of an actual discrepancy essentially resulting from the entirely different terms employed in the two modes of estimate, the results of which are here presented, namely, those by the regular method adopted by the Bureau, based on the net value of deposits at the mints and the value of net imports and exports of bars; the other, the supplementary estimate in the line of direct inquiry of output of mines and smelting works and movement of the precious metals. The so-called "wastage" of the mints and assay offices, it will be understood, is, in point of fact, less than the waste actually sustained. The maximum *bona fide* wastage legally allowed the melter and refiner of the coinage mints (and the assay office at New York) is in the case of gold one thousandth of the metal operated on,

and in the case of silver one and one-half thousandths; while the coiner's wastage is one-half thousandth gold and one thousandth silver. It rarely happens, however, that the maximum wastage allowed by law is actually incurred.

That this, however, is an inconsiderable item for the present purpose is shown by the fact that for the fiscal year ending June 30, 1885, the "wastage" of the operative departments of the several mints and assay offices was \$15,624.57 against surplus bullion recovered amounting to \$70,731.87.

The loss on sale of sweeps amounting for the same period to \$18,423.68 corresponds to the difference between the assay and returned value of the same. It is obvious, however, that for the purpose of the present report this item is not to be treated as deperdition, as all the precious metals contained in sweeps are recovered.*

DETAILS OF THE DISTRIBUTION BY STATES AND TERRITORIES.

ALASKA.

The superintendent of the mint at San Francisco reports the production of the Alaska mill, located at Douglas City, at—

Gold.....	\$280, 479 44
Silver	1, 727 07
Total.....	282, 206 51

The value of the unrefined gold deposited at the mints and assay offices of the United States, and classified as from Alaska, was \$98,375. One of the private refineries reporting to this Bureau gives the value of the bullion treated by it, as produced in Alaska, \$190,486. Adding this to the amount deposited at the mints would make a total of \$288,861. Wells, Fargo & Co. report as having been carried from Alaska the following amounts:

Gold dust and bullion by express.....	\$215, 000
Gold dust and bullion by other conveyance	20, 000
Ores and base bullion by freight.....	16, 000
Total.....	251, 000

It is thought that an estimate of \$300,000 gold and \$2,000 silver will approximate the production of this territory for the year 1885.

ARIZONA.

Mr. John A. Church, who had charge of the collection of the statistics of Arizona, estimates the product for the year to have been—

Gold	\$886, 000
Silver	3, 825, 000
Total.....	4, 711, 000

* Report Director of the Mint, 1885, page 72.

The amount transported, according to Wells, Fargo & Co., was—

Gold dust and bullion by express	\$726, 426
Gold dust and bullion by other conveyance	120, 000
Total gold	846, 426
Silver bullion by express	\$2, 752, 068
Ores and base bullion by freight.....	2, 996, 652
	<hr/> 5, 748, 720
Grand total.....	6, 595, 146

It is well understood that the ore and base bullion carried by freight from Arizona are very largely copper.

The amount of gold carried by Wells, Fargo & Co. about equals the very carefully prepared estimate of Mr. Church. The estimate of the silver production has been placed at \$3,800,000, which is, in round figures, the amount of Mr. Church's estimate taken from the reported production of mines.

CALIFORNIA.

The deposits of unrefined bullion at the mints and assay offices (principally at San Francisco) classified as produced in California were—

Gold.....	\$4, 403, 133
Silver.....	116, 206
Total	<hr/> 4, 519, 339

Private refineries reported the receipt by them of California bullion valued at—

Gold.....	\$8, 376, 595
Silver.....	3, 145, 320

These amounts added to the unrefined deposited at the mints would give a production for California of gold, \$12,779,727; silver, \$3,261,524.

It is probable that in the silver reported as produced from California bullion a portion of Arizona's product is included. The estimate of the superintendent of the mint, based upon the actual production of mines, has been accepted as substantially correct, and the production of this state placed at—

Gold.....	\$12, 700, 000
Silver	2, 500, 000
Total.....	<hr/> 15, 200, 000

DAKOTA.

No returns have been received at this Bureau from the individual mines of this territory, except the Iron Hill Mining Company. As the latter did not commence operations until near the close of December, its product has not been considered. The production of the large mines in the neighborhood of Deadwood, as published in the Engineering

and Mining Journal of the date of March 6, 1886, were for the year 1885, as follows :

Big Bend Hydraulic.....	\$30,000
Caledonia	142,934
Deadwood-Terra	441,491
Father de Smet	381,697
Homestake	1,307,040
Total	2,303,162

Adding the production of the placer mines of Pennington county, reported to the Bureau by Mr. Fred. J. Cross as producing during the year \$53,200, would show a total known production of \$2,356,362.

The amount of unrefined gold deposited at the assay office at New York from the mines of Dakota during the year was \$2,864,731, and the small sum of \$435 at the mint at Philadelphia, a total of \$2,865,166. The value of the silver contained in the gold deposited at the assay office at New York from Dakota was \$77,722, and in that at the mint at Philadelphia \$2, making a total of silver of \$77,724.

Wells, Fargo & Co. report the amount carried from Dakota as—

Gold dust and and bullion by express	\$2,506,623
Gold dust and bullion by other conveyance.....	100,000
Silver bullion by express.....	120,000
Total.....	2,726,623

It is probable that the production of the placers (amounting to over \$100,000 during the year) and of other small mining properties does not go directly to the assay office at New York, but reaches in small lots some one of the large refineries, and credit not be given to Dakota. For this reason I have placed the production of Dakota at something above the amount actually deposited at the assay office at New York, namely:

Gold.....	\$3,200,000
Silver.....	100,000
Total.....	3,300,000

The estimate of Mr. Augustine Heard, who collated the statistics of the production of Dakota for the calendar year, places the production of the territory at, gold, \$3,150,000, silver \$150,000, an aggregate of \$3,300,000. This agrees, in the total, with the estimate by the Bureau, the difference being that he credits the production of the territory with \$50,000 more silver and \$50,000 less gold.

STATES ON THE APPALACHIAN RANGE.

(North and South Carolina, Georgia, and Alabama.)

The production of these states has been very carefully compiled by Mr. George B. Hanna, the assistant assayer at the assay office at Charlotte, N. C., and the detailed estimates are given in the articles upon

these states prepared by Mr. R. P. Waring, the assayer in charge, and printed in this volume. The production credited these states has been made to conform to the amount of which he gives the details of production, viz:

	Gold.	Silver.
Alabama.....	\$8, 000	.....
Georgia.....	136, 000	.....
North Carolina	152, 000	\$3, 000
South Carolina	43, 000	.....

IDAHO.

The amount of unrefined bullion deposited at the mints and assay offices of the United States during the year, classified as from the territory of Idaho, was, gold, \$774,973; silver, \$110,368.

The private refineries reporting to this Bureau state that they have received from Idaho gold and silver of the value of gold \$419,604, and silver \$1,472,588, making a total known production of \$1,194,577 gold, and \$1,582,956 silver.

Mr. Valentine's statement shows the shipments from Idaho to have been for the year—

Gold dust and bullion by express.....	\$905, 946
Gold dust and bullion by other conveyance.....	200, 000
Silver bullion by express.....	867, 410
Ores and base bullion by freight.....	2, 450, 000
Total.....	4, 423, 356

Mr. H. F. Wild, the assayer in charge of the United States assay office at Boisé City, Idaho, who collected the statistics of the territory, gives in detail in his report, published in this volume, the basis of his estimate and the mines producing the same, which was—

Gold.....	\$1, 837, 000
Silver	4, 200, 000
Total.....	6, 037, 000

I have placed the production of gold the same as the estimate of Mr. Wild, but considering his estimate of silver too high, have placed it at \$3,500,000, thus estimating the production of gold and silver in the territory during the year \$5,300,000.

MONTANA.

Mr. Spruille Braden, assayer in charge United States assay office at Helena, Mont., who had charge of the collection of the statistics of the production of gold and silver in that territory, and whose report is pub-

lished in this volume with the detailed items by counties of his estimate, places the production of Montana during the calendar year 1885 at—

Gold.....	\$3,400,000
Silver	11,500,000
Total.....	14,900,000

Mr. Valentine's statement shows the shipments to have been—

Gold dust and bullion by express.....	\$2,091,000
Silver bullion by express.....	6,317,512
Ores and base bullion by freight.....	5,816,000
Total.....	14,224,512

The ores and base bullion by freight undoubtedly contained considerable copper and lead. The silver bullion shipped by express contained considerable gold. It is safe to say that Mr. Braden's estimate of the gold production is not far from correct.

The amount of unrefined bullion deposited at the mints and assay offices credited to Montana during the year was, gold, \$1,746,418; silver, \$2,429,134. The value of the gold and silver reported to this Bureau by private refineries, as received by them from Montana, was \$828,669 gold, \$4,604,360 silver. This, added to the deposits at the mints, would give a total of, gold, \$2,575,087; silver, \$7,033,494.

It is known that the rich copper matte of the Anaconda mine, reported by Mr. Braden as containing \$891,381 in silver, is reduced abroad, and the product of the Lexington, reported to have been \$111,421 gold, and \$735,610 silver, is shipped directly to Paris. Adding the production of these two mines to the amount of unrefined deposited at the mints and assay offices, and the amount reported as sent to private refineries in this country, would make a total production of, gold, \$2,686,508; silver, \$8,660,485.

It is probable, however, that a portion of the production of Montana is credited to Colorado by the Colorado refineries at which it is treated.

I have placed the production at \$3,300,000 gold, and \$10,060,000 silver, against Mr. Braden's estimate of \$3,400,000 gold, and \$11,500,000 silver.

NEVADA.

The production of the state of Nevada is susceptible of very close approximation, for the reason that the product of the mines is taxed by the state and the county assessors are required to report to the state comptroller the value of the product of the various mining companies. The value of this product as reported by the state assessors was during the year \$6,636,781.

The amount carried, as reported by Wells, Fargo & Co., was—

Gold dust and bullion by express	\$1, 253, 355
Silver bullion by express	6, 575, 430
Ores and base bullion by freight	1, 384, 336
<hr/>	
Total	9, 213, 121

The amount deposited at the mints during the year of unrefined bullion credited to Nevada was, gold, \$1,450,029; silver, \$1,642,119.

The private refineries reporting to this Bureau state the amount of Nevada's bullion handled by them during the year was \$1,872,879 gold, and \$2,463,395 silver.

Adding this to the deposits at the mints of unrefined, would give as the product of the state, gold, \$3,322,908; silver, \$4,105,514.

The estimate of Mr. William Garrard, superintendent of the mint, published in this volume, gives the production as—

Gold	\$3, 083, 800
Silver	6, 229, 311
<hr/>	
Total	9, 313, 111

I have placed the production at:

Gold	\$3, 100, 000
Silver	6, 000, 000
<hr/>	
Total	9, 100, 000

NEW MEXICO.

The very carefully prepared estimate of Mr. Walter C. Hadley, who had charge of the collection of the statistics of this territory in the absence of Dr. F. M. Endlich who had undertaken the work and was called East, is, gold, \$806,000; silver, \$3,025,000.

The shipments reported by Wells, Fargo & Co. were—

Gold dust and bullion by express	\$226, 519
Gold dust and bullion by other conveyance	60, 000
Silver bullion by express	1, 107, 627
Ores and base bullion by freight	2, 431, 617
<hr/>	
Total	3, 825, 763

This agrees in the total substantially with the estimate of Mr. Hadley.

I have placed the production of this territory at—

Gold	\$800, 000
Silver	3, 000, 000
<hr/>	
Total	3, 800, 000

This, in round figures, is the amount of Mr. Hadley's estimate.

OREGON.

The superintendent of the mint at San Francisco, who had charge of the collection of statistics of this state, reports the production of the mines to have been, gold, \$742,235. Allowing a small amount for unreported mines, the production has been placed at \$800,000 gold and \$10,000 silver.

UTAH.

Mr. A. Hanauer, the agent of the Omaha and Grant Refining Company at Salt Lake City, who had charge of the collection of the statistics of the production of Utah, places the production of the territory at, gold, \$187,000; silver, \$7,733,800.

The shipments reported by Wells, Fargo & Co. were—

Gold dust and bullion by express	\$33,362
Silver bullion by express.....	3,061,424
Ores and base bullion by freight.....	5,831,948
Total.....	8,926,734

The latter item of course includes a very large amount of copper and lead.

The deposits of unrefined bullion at the mints of the United States during the year classified as from Utah were, gold, \$60,545; silver, \$190,706.

The amount reported by private refineries to have been received from Utah during the year was, gold, \$117,978; silver, \$3,256,317. This, added to the deposits of unrefined at the mints, would make the amount of gold \$178,522 and of silver \$3,447,023.

The estimate of Mr. Hanauer as to gold has been adopted, and the production placed at—

Gold	\$180,000
Silver	6,750,000
Total.....	6,930,000

WASHINGTON TERRITORY.

The superintendent of the mint at San Francisco reports the production of the mines of Washington territory at, gold, \$126,172; silver, \$67,500. This amount has been practically adopted as the estimated production of the territory.

COMPARISON AND REVIEW.

It will be useful to compare the estimate of production as distributed by states and territories with the estimate of the Director for the calendar year 1884 as distributed for that period.

COMPARISON OF ESTIMATES OF PRODUCTION OF THE UNITED STATES BY STATES AND TERRITORIES FOR 1884 AND 1885.						
State or Territory.	Gold.		Silver.		Total.	
	1884.	1885.	1884.	1885.	1884.	1885.
Alaska	\$200,000	\$300,000	.....	\$2,000	\$200,000	\$302,000
Arizona	930,000	880,000	\$4,500,000	3,800,000	5,430,000	4,680,000
California	13,600,000	12,700,000	3,000,000	2,500,000	16,600,000	15,200,000
Colorado.....	4,250,000	4,200,000	16,000,000	15,800,000	20,250,000	20,000,000
Dakota	3,300,000	3,200,000	150,000	160,000	3,450,000	3,360,000
Georgia	137,000	136,000	.....	.....	137,000	136,000
Idaho.....	1,250,000	1,800,000	2,720,000	3,500,000	3,970,000	5,300,000
Montana.....	2,170,000	3,300,000	7,000,000	10,060,000	9,170,000	13,360,000
Nevada	3,500,000	3,100,000	5,600,000	6,000,000	9,100,000	9,100,000
New Mexico	300,000	800,000	3,000,000	3,000,000	3,300,000	3,800,000
North Carolina	157,000	152,000	3,500	3,000	160,500	155,000
Oregon	660,000	800,000	20,000	10,000	680,000	810,000
South Carolina	57,000	43,000	500	.....	57,500	43,000
Utah	120,000	180,000	6,800,000	6,750,000	6,920,000	6,930,000
Washington.....	85,000	120,000	1,000	70,000	86,000	190,000
Texas, Alabama, } Tennessee, Vir- } ginia, Vermont, } Michigan, and } Wyoming. }	84,000	90,000	5,000	5,000	89,000	95,000
	30,800,000	31,801,000	48,800,000	51,600,000	79,600,000	83,401,000

Colorado still retains the foremost rank as the largest producer of the precious metals in the United States. Notwithstanding the decline in the price of silver, the quantity produced remained about the same as during the preceding year.

California with its \$12,700,000 gold and \$2,500,000 silver retains second position. The most notable changes have been in Montana and Idaho, the former having increased from \$9,170,000 in 1884 to \$13,360,000 in 1885, and the latter from \$3,970,000 in 1884 to \$5,300,000 in 1885.

Nevada, Utah, New Mexico and Dakota still hold their own, while the production of Arizona has slightly decreased.

In the Appendix will be found a table showing the estimated value of the gold and silver produced from the mines of the United States from 1792 to the close of 1885.

DEPOSITS AND PURCHASES OF GOLD AND SILVER AT THE MINTS AND ASSAY OFFICES DURING THE CALENDAR YEAR 1885.

In the Appendix will be found statements showing the deposits and purchases of gold and silver bullion at the mints of the United States during the calendar year 1885 in standard ounces and value, classified according to the description of the bullion, whether of domestic production, foreign bullion, United States or foreign coin, jewelers' bars, &c. It will appear that the total value of gold deposited during the year at the mints and assay offices amounted to \$49,216,699, of which \$4,502,647 consisted of fine and unparted bars of United States institutions redeposited, leaving the net deposits of gold bullion during the year \$44,714,052. Of this amount, \$7,548,919 consisted of foreign coin.

The statement of imports and exports shows the total imports of foreign gold coin during the year to have been \$17,663,286, the exports \$6,905,141, leaving in the country accordingly \$10,758,145. This exceeds by \$3,209,225 the value of the foreign gold coin deposited at the mints and assay offices. It is probable that a portion of this excess was melted before it was sent to the mints and that it was classified as foreign bullion, for the statement of deposits and purchases at the mints shows the deposits of foreign gold bullion to have been during the year \$4,041,191, while the imports of foreign gold bullion amounted to only \$3,676,091, of which \$140,340 was of re-exported, leaving the net imports of gold bullion—foreign and domestic—during the year \$3,535,751.

The total deposits and purchases of silver bullion at the mints and assay offices of the United States during the calendar year amounted to 32,547,420 standard ounces, equal at its coining value to \$37,873,362, of which \$2,036,636 consisted of fine and unparted bars, bearing the United States mint or assay office stamp, redeposited. The net deposits and purchases of silver during the period named amounted, therefore, to \$35,836,725. Of this amount \$1,329,193 was classified as foreign silver coin.

The imports of foreign silver coin reported by the custom-houses during the year amounted to \$12,534,623. The exports of the same amounted to \$11,275,064. It thus appears that \$1,259,559 remained in the country. This about corresponds to the amount deposited at the mints and assay offices classified as foreign coin. This amount consisted very largely of Mexican dollars and South American coin.

OUTPUT OF GOLD AND SILVER COIN AND BARS BY MINTS AND ASSAY OFFICES, DURING THE CALENDAR YEAR 1885.

The coinage executed during the calendar year at the coinage mints of the United States consisted of 47,544,521 pieces of the face value of \$56,926,810.74. Of this amount 3,002,313 pieces, valued at \$27,773,012.50, consisted of gold coin; 31,295,544 pieces, valued at \$28,962,176.20, of silver coin, and 13,246,664 pieces, valued at \$191,622.04, of minor coin.

Of the gold coinage nearly two-thirds consisted of half-eagles, the larger portion of the remainder being double eagles and eagles.

Of the silver coinage 28,697,767 pieces were standard silver dollars. Of the minor coins 11,765,384 consisted of one-cent bronze pieces, and 1,476,490 of 5-cent nickel pieces.

As coinage was suspended at the mint at Carson, March 8, the larger part of the coinage for the year 1885 was executed at but three out of the four mints of the United States.

In addition to the output of coins, gold and silver, there were manufactured by the mints and assay offices, stamped bars namely: Gold bars, valued at \$18,484,884.01, and silver bars of the coining value of \$9,005,211.08, or 7,738,853.32 standard ounces. The total value of the gold and silver bars manufactured was \$27,490,095.09. Of this amount \$15,287,527.62 of gold and \$6,578,778.98 worth of silver bars (coining value) were manufactured at the assay office at New York.

IMPORTS AND EXPORTS OF BULLION AND COIN DURING THE CALENDAR YEAR 1885.

The total value of the bullion and coin imported into the United States during the calendar year 1885 was \$41,418,029; \$8,322,909 consisted of bullion and \$33,095,120 of coin. Of the total imports \$23,645,311 consisted of gold and \$17,772,718 of silver, the latter as reported by the custom-houses, reckoned presumably at its approximate commercial value.

The total exports of gold and silver from the United States during the same year amounted to \$44,697,749, of which \$11,417,207 was gold and \$33,280,542 silver, reckoned presumably at its commercial value.

It would appear, then, that while the United States lost by export, as compared with imports, the net sum of \$3,279,720 in gold and silver bullion and coin during the year, it gained in gold \$12,228,104 and lost in silver \$15,507,824.

The imports of gold bullion amounted to \$3,676,091. The exports of gold of domestic production amounted to \$705,108 and of foreign gold \$140,340, a total export of gold bullion of \$845,448, leaving the net imports of gold bullion during the year \$2,830,643.

The imports of gold coin amounted to \$19,939,220, of which \$2,305,934 consisted of American coin and \$17,663,286 of foreign coin.

The exports of gold coin during the same period were of United States coin, \$3,666,618, and of foreign gold coin, \$6,905,141, a total of \$10,571,759, leaving a net gain in gold coin by import of \$9,397,641.

The amount of silver bullion imported into the United States during the year was \$4,646,818, reckoned presumably at its commercial value.

The exports of silver bullion during the same period were of domestic bullion \$20,849,612, and of foreign bars \$13,150, a total of \$20,862,762.

Of the exports of silver bullion \$1,425,732 consisted of United States mint or assay office bars and \$19,423,880 of domestic bullion, which did not reach the mints or assay offices.

The imports of silver coin into the United States during the calendar year named amounted to \$13,125,900, of which only \$591,277 consisted of our own coin and \$12,534,623 of foreign silver coin.

The exports of silver coin during the same period were as follows: Of United States silver coin \$1,142,716, all of which, except \$113,095, consisted of trade dollars, and of foreign silver coin \$11,275,064. The total export of American and foreign silver coins was \$12,417,780. Deducting this from the imports of silver coin there is shown a net gain by imports of silver coin of \$708,120.

WORK OF PRIVATE REFINERIES FOR THE CALENDAR YEAR 1885.

Except in the instance of a single concern out of the ten leading refineries in the country which produce stamped bars of fine gold and silver, returns of production have been communicated to the Bureau of the Mint through the courtesy and public spirit of their owners or agents. As the product of a number of smaller refineries is distributed through the larger ones, the ten refineries referred to handle substantially the whole product of bullion not originally deposited for refining at the mints and United States assay offices. The geographical distribution of the sources of production has been reported by states and territories, as well as the output itself, in the case of each of the nine refineries referred to, which are as follows:

Aurora Smelting and Refining Company, Aurora, Ill.
 Boston and Colorado Smelting Company, Denver, Colo.
 Chicago Smelting and Refining Company, Chicago, Ill.
 Kansas City Smelting and Refining Company, Argentine, Kans.
 Newark Smelting and Refining Company, Newark, N. J.
 Omaha and Grant Smelting Company, Omaha, Nebr., and Denver, Colo.
 Pennsylvania Lead Company, Mansfield, Pa.
 Selby Smelting Company, San Francisco, Cal.
 Saint Louis Smelting and Refining Company, Saint Louis, Mo.

Messrs. Platt Bros., of New York, although repeatedly solicited, failed to report the product of their refinery. The product of these nine refineries, comprising all of note in the United States, was during the calendar year named, gold 840,074 fine ounces, value, \$17,364,348; silver, 31,458,080 fine ounces, worth at its coining rate in silver dollars, \$40,673,155.

The bullion bearing the stamp of the Platt refinery received at the mint at Philadelphia and assay office at New York during the year was gold 11,183 fine ounces, value \$231,160, and silver 1,986,609 fine ounces, value \$2,568,488. Adding this to the above would make the total weight and value of the gold and silver bars known to have been prepared by private refineries during the year, gold 851,257 fine ounces, value \$17,595,508; silver, fine ounces, 33,444,689, value \$43,241,643.

Gold.—By adding the value of the unrefined gold deposited at the mints and assay offices of the United States during the year, namely, \$15,830,024, to the value of the output of gold by private refineries,

namely, \$17,595,508, it is found that the gold refined by United States and private refineries amounted to \$33,425,532.

Of this it is probable that a portion was gold from British Columbia and Mexico, for the statement of Wells, Fargo & Co. shows the receipt into this country of gold from British Columbia amounting to \$608,834, and from the west coast states of Mexico to the amount of \$287,704, exclusive of the gold contained in silver bullion brought by express from Mexico.

The total amount of gold of foreign production refined by private refineries in the United States may fairly be estimated at \$1,000,000. The gold bars produced by these refineries are not however in all cases refined to such a degree as to entitle them to be classified at the mints as "refined." It is known that the deposits of gold at the assay office at New York classified as unrefined included the gold bars of at least one of these refineries and in amount to over \$1,000,000 in value.

Deducting from the \$33,425,532 the round sum of \$1,000,000 of foreign bullion known to be refined by private refineries, and also the sum of \$1,000,000 representing the value of gold bars produced by private refineries and subsequently further refined by the United States assay office at New York, we have the net sum of \$31,425,532. This amount represents the domestic product of gold by the mines of the United States during the calendar year 1885.

This amount is practically in agreement with my previous estimate as based solely upon deposits at the United States mints and assay offices, exports and imports, and bars furnished consumers by private refineries, namely, \$31,821,161, or, as previously quoted in the text, in round numbers, \$31,800,000.

Silver.—The same plan will be followed to ascertain by this method the domestic production of silver. To the value of the amount of refined silver bars known to have been produced by the same refineries during the year 1885, viz: 33,444,689 fine ounces of silver, equal, at its coining value, to \$43,241,643, will be added the value of the deposits of unrefined silver of domestic production at the mints and United States assay offices during the same period, viz: 4,883,700 fine ounces, valued at its coining rate at \$6,314,124. Thus is reached a total of silver bullion refined by the private refineries and by the mints and assay office at New York, amounting, at the coining value, to \$49,555,767, against \$51,659,912 as estimated by official returns from the mints and United States assay offices, and from the custom-houses, and approximately from private refineries, and as exhibited in the preceding tabular estimate of the production of silver in the United States during the calendar year 1885, by the regular method adopted by this Bureau.

Between the two estimates by values a difference occurs of \$2,104,145. This is in part to be accounted for by the amount entering into the official estimate, and not in the collateral estimate, namely, the amount of concentrates and rich ores sent abroad for treatment and reported

as bullion by the custom-houses. The difference is probably also to be ascribed in part to the excess of production by the refinery of Platt Brothers, of New York, over the amount traced through their transactions with the mint at Philadelphia and the assay office at New York. This probable excess, it will be understood, is represented in the official estimate through deposits at the mint at Philadelphia and assay office at New York, one or both; or in exports of silver manifested at the custom-houses. On the assumption of any excess between the actual output of silver on the part of the above-named firm and the deposits officially traced to the same firm, it is probable indeed that silver bullion has been distributed in each of the ways here indicated.

The fine silver bars, bearing the stamp of the refineries named, received principally under purchases at the mints and assay office at New York during the year, valued at the coining rate, aggregated \$25,256,633.

ESTIMATES OF PRODUCTION.

Reference has been made to the widely different character of the sources of the statistics of production of the precious metals employed in the best known official and other annual statements, and in personal contributions from time to time on the same subject at the hands of statisticians and economists.

In the volume on statistics of the precious metals of the United States by Mr. Clarence King, published in Vol. XIII of the Report of the Tenth Census, p. 377, will conveniently be found, in company, tables prepared on the leading systems in use.

The well-known estimates of Dr. Adolph Soetbeer of Göttingen, Germany, there adduced are "based on an analytical study and comparison of the literature of the subject" as well described by Mr. King, incidental to a comprehensive review of the general statistics of the precious metals, of which subject Dr. Soetbeer has for many years been a special student. These estimates are generally accepted with confidence, as faithful compilations from official sources where official material is available, and especially for periods of time for which systematic statistics are wanting, and for which what is now available, in the place of such statistics, can be supplied only by historical research. Thus some of the work of this eminent writer and statistician is of a kind which rests on individual opinions and hypotheses. Such of his results as are conclusions merely, should, however acceptable, be distinguished from those which are of the nature of actual statistics.

I have already called attention to the distinguishing features of Mr. John J. Valentine's useful annual "statement of precious metals produced in the States and Territories west of the Missouri River (including British Columbia) and receipts by express from the west coast States of Mexico."

The publication of these statements in tabular form by Messrs. Wells,

Fargo & Co. offers a commendable instance of intelligent public spirit, especially in contrast with the disposition too often manifested in this country to withhold from public or official cognizance all matters of private business.

The material transported in course of the extensive operations of his own company, as well as by other connecting lines of transportation, reported by Mr. Valentine in these statements, is not all of the same kind as the material of which it is the object of the present report to give the annual statistics. Quantities drawn from manifests and given by Mr. Valentine are therefore not set forth in the same terms as those traced by this Bureau, nor are values of the same uniform with those employed in the Mint service, even when fixed at all. A necessity of allowances for unequal terms therefore arises when the Valentine transportation statistics are used in connection or in comparison with those compiled by this Bureau from official sources and supplemented by recourse to special inquiry.

The fact that the Valentine circular is published at the close of the year for which it is an estimate tends to its ready adoption and immediate use. It thus happens that prepossessions are formed in favor of Mr. Valentine's returns, and it sometimes appears that writers who have once adopted the figures first announced become committed to the same, to the prejudice of later statistics and more carefully revised estimates, which, in comparison with those alluded to, the statements of the Bureau of the Mint, may fairly be claimed to be considered without derogation of the useful circular issued by the manager of Wells, Fargo & Co.

It will be well to inquire to what extent are Mr. Valentine's annual statements an exposition of the production of the precious metals in the United States, and, incidentally to this question, whence has arisen the mistake on the part of some writers that these go farther than it will be seen is justified either by the movements reported or by the means employed in supplementary estimates. These questions are important because the Valentine statement is sometimes compared on equal grounds with the annual estimate of the Director of the Mint, obviously upon the supposition that the object of both, while sought by different methods, is the same. As a matter of fact the object of the circular statement referred to is not the same, while the material and the results obtained are different as well as the means employed.

In recognition of the information imparted by it upon the sources of production, and further as an important contribution to the subject of the movement of the precious metals, I have elsewhere signified my appreciation of the value of Mr. Valentine's annual circular. Similar acknowledgments of its merit, if not indeed expressed, have been implied by my predecessor in the respect always accorded to it in previous reports. The object and limitations of the Valentine circular, as well as the means employed, are set forth by their author in his testi-

mony taken for the United States Monetary Commission of 1876, I, 32-48, Appendix. The corporation of which Mr. Valentine was then superintendent, and of which now he is the vice-president and general manager, formerly enjoyed the almost exclusive monopoly of carrying such gold dust, gold bullion, and doré bars as were commonly sent by express from the mining regions of California and the Great Basin to the mints at San Francisco and Carson.

In 1870, when the issue of the annual circular was begun, the main production of gold dust and gold bullion was still in the regions mentioned. Mr. Valentine was therefore in a good position for estimating the product of the principal mining regions west of the Missouri river. Many allowances, however, had to be made, the measure of which depended on the special and general information possessed by the compiler, and on his personal application to the subject.*

In the first place, allowances had to be made for duplication of shipments, in order to avoid reckoning them more than once in the tables. As stated by Mr. Del Mar, formerly Chief of the Bureau of Statistics, by whom Mr. Valentine's testimony was taken, allowance had to be made for (by adding to the gold brought by the express company) the gold bullion brought in by coasting vessels, stages, and private conveyance, and for the gold dust brought in by the United States mail, as well as by miners on their persons; also for the gold produced in Colorado and elsewhere which was sent for coinage to the Eastern mints (and assay offices) and to bullion dealers. On the other hand, he had to deduct the very considerable quantities of bullion brought in by the express company from Lower California, Mexico, British Columbia, and other foreign countries on the Pacific seaboard.

With regard to silver, he had, according to Mr. Del Mar, to add to the express company's returns the bullion produced in the Eureka and other districts, whose output of the precious metals was in the form of base metal, forwarded otherwise than by express. He had also to add the silver produced in Utah and the territories and districts east of Utah, which is and was forwarded eastward by other conveyance than the Wells, Fargo & Co. express. Moreover, as all unrefined gold bars contain silver, and all unrefined silver bars contain gold, sometimes to the extent of nearly one-half their value, Mr. Valentine had to estimate the relative proportion of the two metals in both descriptions of bars, by percentages regarded as approximate for the product of given mines or districts.

It appears from the frank testimony given by Mr. Valentine for the benefit of the Monetary Commission that since 1870 he has undertaken to roughly estimate the qualities of mixed bullion forwarded through the Wells, Fargo & Co. express for the first time, to the exclusion of all that was offered again in the same form or in the form of refined bars, and to discriminate between bullion of foreign and of domestic

* Letter of Alexander Del Mar in the New York Sun, March 30, 1884.

production. Once at least corroborative testimony was sought by information from producing mines as to their annual output either by direct inquiry or by compilation from their annual fiscal reports. This was in December, 1876. That in 1877 he regarded as ample his opportunities and means of information for such an undertaking appears from the following answer to one of the interrogatories of the examiner, as follows:

"Q. 117. Of the various methods which have been pursued for ascertaining the production of the precious metals in the United States, to wit, the export, coinage, and consumption method, the method of inquiries at the banks and assay offices, the method of inquiries addressed to executive officers of State and Territorial governments, and the express method pursued by you, which do you deem the most reliable, and which, in case of a conflict of evidence between them, would you regard as correct, to the exclusion of the others?"

"A. We of course incline to our own method, the express having agencies at every point producing any appreciable amount of gold and silver in States and Territories west of the Missouri River, British Columbia, and the west coast of Mexico included; and being in constant communication with all parties engaged in the production of gold and silver, we believe our opportunities are better and more extensive than those possessed by persons prosecuting inquiries by any of the other methods named." (Silver Commission Report, I, 46, 47.)

Since the opening of the Southern Pacific and Northern Pacific railways and their connecting lines, the Wells, Fargo & Co. express has parted with a portion of its bullion-carrying business, now shared by other express and transportation concerns. Besides, the bulk of the gold as well as silver bullion is now produced no longer by California and the Great Basin, but by Colorado, Utah, Montana, Idaho, New Mexico and Arizona, whence shipments to the United States assay offices and mints, and to private refineries and dealers are only in small part by Wells, Fargo & Co. express.

Mr. Valentine has taken occasion to amend his estimates when found by him to require correction, as in 1877, when, in a communication to Senator John P. Jones, of Nevada, he reviewed his annual statements from 1870-'76.*

While the valuable compilations of Mr. Valentine, of Wells, Fargo & Co. as to the production of the states and territories west of the Missouri river have been accorded a place in the Appendix of the reports of the Director of the Mint as worthy of public consideration, Mr. Valentine's estimates have never been made the basis of any estimates by this Bureau as to the production of gold and silver in the United States, but have frequently been used for the purpose of comparison and also in some cases to explain doubtful points.

Mr. Del Mar's supposition that the gold and silver brought by Wells, Fargo & Co. from Mexico and British Columbia was duplicated in the Director's statements, from its having been so duplicated in Mr. Valentine's, does not on examination appear to be borne out.

Mr. Del Mar has cited in the Appendix (p. 13) to the same volume

* See Report United States Monetary Commission, 1876, Vol. I. Appendix, p. 22.

referred to below the estimates by different authorities of the production of silver in the United States from 1871 to 1876, and has supplemented these by estimates of his own. Mr. Del Mar's estimate appears by itself in the statistics of the Production of the Precious Metals, United States Census, 1880, XIII, 93, as well as a table combining the annual statements of Mr. Valentine for 1879 and 1880 (pp. 90-91).

The various estimates of the production of silver in the United States from 1871 to 1876, inclusive, adduced by Mr. Del Mar on the part of several authorities, comprising, I believe, all of note at the date of his report, February 24, 1877, are as follows :

COMPARATIVE TABLE SHOWING SEVERAL PUBLISHED ESTIMATES OF THE PRODUCTION OF SILVER IN THE UNITED STATES DURING THE CALENDAR YEARS 1871-1876, INCLUSIVE.

Authority.	1871.	1872.	1873.	1874.	1875.	1876.
¹ San Francisco Journal of Commerce...	\$24, 246, 000	\$27, 548, 811	\$38, 500, 000	\$40, 250, 000	\$46, 500, 000	\$48, 000, 000
² Whitehill, mineralogist of Nevada ..	23, 000, 000	28, 000, 000	35, 000, 000	40, 000, 000	40, 000, 000	.....
³ San Francisco Commercial Herald...	25, 000, 000	28, 000, 000	36, 000, 000	37, 000, 000	38, 000, 000	45, 000, 000
⁴ Raymond, United States Commissioner of Mines	22, 000, 000	25, 750, 000	36, 500, 000	32, 800, 000	41, 400, 000	.....
⁵ Gansl's report to N. M. Rothschild & Sons	20, 250, 000	25, 000, 000	32, 500, 000	30, 000, 000	35, 000, 000	50, 000, 000
⁶ Valentine's amended circular of December 30, 1876.....	20, 286, 000	20, 527, 500	28, 352, 100	30, 498, 000	34, 043, 910	41, 506, 672
⁷ Valentine's amended estimates of February 5, 1877....	19, 286, 000	19, 924, 429	27, 483, 302	29, 699, 122	31, 635, 239	39, 292, 924
⁸ Returns of the mines to the United States Monetary Commission, 1876, 1877.....	18, 111, 351	18, 556, 577	25, 131, 460	25, 402, 382	30, 209, 986	38, 184, 350

¹ According to the San Francisco Journal of Commerce, January 12, 1876, and January 24, 1877, from time to time amended.

² According to Mr. Whitehill, in his report of State mineralogist of Nevada, Carson City, 1875.

³ According to the San Francisco Commercial Herald of January 18, 1877.

⁴ According to Mr. Raymond, as published in Hon. Abram S. Hewitt's address on mining and metallurgy, before the American Institute of Mining Engineers, Philadelphia, June 20, 1876.

⁵ According to Mr. Gansl's report to Messrs. N. M. Rothschild & Sons, London, as published in the appendix to the British Silver Commission report.

⁶ According to Mr. Valentine's amended circular of December 30, 1876.

⁷ According to Mr. Valentine's amended estimates to the chairman of the United States Monetary Commission, dated February 5, 1877. (Appendix J.)

⁸ According to returns made by the mining companies, &c., for the United States Monetary Commission, between November, 1876, and February, 1877, the returns for 1876, completed to the close of the year.

CONSUMPTION OF GOLD AND SILVER IN THE INDUSTRIAL ARTS.

The use of gold and silver as raw material in the arts and manufactures forms an important element in estimates of production of the precious metals. As an element of still greater importance it enters into all estimates of the stock of metallic money in the country at any given period, as exhibited by the tables of the "coin circulation of the United States" issued by this Bureau from time to time.

Impressed with the absolute dearth of statistics on this subject, and shortly after entering upon the duties of the office of Director of the Mint in 1879, my predecessor endeavored to secure accurate information as to the actual consumption. Circular letters were addressed by the Bureau of the Mint to manufacturers the nature of whose business, according to available indexes, indicated a consumption of gold or silver either in the preparation of chemicals or in the manufacture of jewelry, watch-cases, and other solid or plated wares. Some 3,500 firms were addressed, and replies received from over 1,400, of which 448 persons and firms reported a consumption of gold and silver.

From the information thus obtained, the Director of the Mint estimated the annual consumption of gold of all kinds in this country, for the year 1879, as aggregating \$7,000,000, and of silver about \$5,000,000: a total of \$12,000,000.

In 1880 the Director renewed the investigation of the previous year, addressing over 7,000 circular letters and receiving about 2,800 replies, of which number 1,381 reported a use in the industrial arts of over \$8,600,000 of gold and \$3,400,000 of silver in value.

From this investigation the Director estimated the consumption of gold to be nearer \$10,000,000 than \$7,000,000, his previous estimate, and concluded that the consumption of silver was not changed by the result of the second inquiry.

Again, in 1881, circular letters were addressed to the number of 6,417. Of this number 2,443 firms replied; 1,143 reporting a consumption of gold of over \$10,000,000 in value and of silver over \$3,380,000.

Director Burchard therefrom concluded in 1881 that \$11,000,000 represented the annual consumption of gold and \$6,000,000 of silver for that year.

In 1884 circular letters were again addressed to nearly 8,000 firms. Replies were received from 5,418 firms. Of these 2,734 reported a consumption during the calendar year 1883 of nearly \$14,500,000 in gold and over \$5,500,000 in silver, a total of over \$20,000,000. Hence an increase of \$7,000,000 over that reported for the calendar year 1881.

Continuing the excellent efforts of my predecessor to secure accurate statistics of the consumption of the precious metals in the United States, I have undertaken to obtain the requisite information through a careful canvass of all firms engaged in the manufacture or repair of articles of gold or silver.

A copy of the circular issued by way of obtaining the statistics for the calendar year 1885 will now be introduced for the purpose of showing the nature and object of the inquiries made. An auxiliary purpose is subserved by a presentation of the results obtained by the inquiries instituted in 1884 by this Bureau for the previous year. Of this circular some 8,000 copies were sent out in return envelopes during the last half of the present calendar year.

TREASURY DEPARTMENT, BUREAU OF THE MINT,
Washington, D. C., March 11, 1886.

SIR: The inquiries instituted from time to time by the Director of the Mint for the purpose of ascertaining the amount of gold and silver used in the United States in the arts and manufactures have elicited such satisfactory responses that I am encouraged to renew the same inquiries for the calendar year 1885.

The returns for 1883 are exhibited in the following table. This is communicated for the information of the correspondents of the Bureau, and in order to show what use is made of the information obtained.

STATEMENT SHOWING THE VALUE AND CHARACTER OF THE GOLD AND SILVER USED IN THE ARTS AND MANUFACTURES DURING THE CALENDAR YEAR 1883, AS REPORTED BY THE PERSONS AND FIRMS WHO HAD BEEN ADDRESSED.								
GOLD.								
Manufactures.	Number manuf- uring.	United States coin.	Stamped United States or refinery bars.	Old jewelry, plate, and other old ma- terial.	Foreign coin.	Native grains, nug- gets, &c.	Wire or rolled plate.	Total gold.
Watch-cases	32	\$575, 812	\$2, 976, 550	\$38, 101	\$1, 508	\$520	\$5, 817	\$3, 598, 308
Watch-chains	14	374, 997	286, 884	1, 907	600	135, 410	27, 202	827, 000
Dental supplies	7	700	33, 437	3, 775	.....	.....	.....	37, 912
Pens	14	14, 578	90, 325	6, 100	5, 227	2, 134	27, 560	145, 924
Instruments	45	68	.....	3, 568	.....	621	942	5, 199
Leaf	51	178, 424	792, 551	57, 498	6, 816	6, 700	42, 835	1, 084, 824
Plate	219	379, 291	67, 928	5, 500	590	8, 933	66, 626	528, 868
Spectacles	41	192, 400	7, 169	8, 830	1, 315	4, 987	727	215, 428
Chemicals	27	7, 438	7, 685	3, 551	550	207	12, 180	31, 611
Jewelry and watch- makers' supplies ...	11	24, 498	13, 983	9, 123	.....	1, 569	30, 054	79, 227
Jewelry and watches	2, 273	3, 125, 738	2, 861, 149	738, 688	177, 794	541, 306	458, 745	7, 905, 163
Total	2, 734	4, 875, 587	7, 137, 661	876, 641	194, 400	702, 387	672, 688	14, 459, 464

STATEMENT SHOWING THE VALUE AND CHARACTER OF THE GOLD AND SILVER
USED IN THE ARTS AND MANUFACTURES, ETC.—Continued.

SILVER.

Manufactures.	United States coin.	Stamped United States or refinery bars.	Old jewelry, plate, and other old material.	Foreign coin.	Native grains, nuggets, &c.	Wire or rolled plate.	Total silver.	Total silver and gold.
Watch cases.....	\$35, 200	\$1, 777, 193	\$31, 937	\$219	\$1, 000	\$50	\$1, 845, 599	\$5, 443, 907
Watch-chains.....	524	14, 768	.....	.....	6, 790	1, 462	23, 544	850, 544
Dental supplies...	450	6, 060	.....	.....	.....	228	6, 738	44, 650
Pens.....	216	4, 254	100	1, 655	505	.....	6, 730	152, 654
Instruments.....	931	3, 752	693	755	864	6, 995	13, 990	19, 189
Leaf.....	11	22, 697	4, 107	300	835	18, 933	46, 883	1, 131, 707
Plate.....	16, 856	1, 710, 515	40, 761	7, 690	8, 495	281, 977	2, 066, 294	2, 595, 162
Spectacles.....	3, 631	16, 461	1, 254	205	250	1, 981	23, 782	239, 210
Chemicals.....	9	375, 429	35, 554	500	1, 580	3, 347	416, 419	448, 030
Jewelry and watch-makers' supplies.	245	4, 806	800	.....	1, 505	975	8, 331	87, 558
Jewelry and watches.....	158, 564	616, 237	106, 745	142, 949	49, 733	23, 992	1, 098, 220	9, 003, 383
Total.....	216, 637	4, 552, 172	221, 951	154, 273	71, 557	339, 940	5, 556, 530	20, 015, 994

The importance of such tabulations at the hands of my predecessor has been widely appreciated, both at home and abroad, as going far toward an approximation of an estimate of the available metallic currency of the United States at given periods, and toward diminishing the unknown factors in the aggregate of consumption of the precious metals. The question presents new features from time to time as population and luxury increase, and as the caprice of fashion and custom continually leads to changes in form and quantity of the stock of the precious metals in the country, as fluctuating between bullion, coin, and manufactured goods.

For the purpose of continuing the investigations of the Bureau, it will be a public service, and I shall be personally obliged if you will kindly fill up the blank prepared for the year 1885, and return it, in the addressed envelope herewith inclosed, at your earliest convenience.

The information, as heretofore, will be confidential, and used only for composition of aggregates.

Very respectfully,

JAMES P. KIMBALL,
Director of the Mint.

STATEMENT OF THE VALUE OF GOLD AND SILVER USED BY ——— DURING THE YEAR ENDED DECEMBER 31, 1885, IN THE MANUFACTURE (OR REPAIR) OF ———.

Character of material used.	Gold.	Silver.
United States coins used.....	\$.....	\$.....
Stamped United States or refinery bars used
Foreign coin used.....
Old jewelry, plate, and other old materials used.....
Native grains, nuggets, &c., used.....
Wire or rolled plate used.....
Total	=====	=====
Total consumed in solid work
Total consumed in plated work

In response to the 8,054 circulars sent out by the Bureau replies were received from 4,380 of the number addressed, of which 2,707 reported a consumption of \$11,152,120 in gold and \$4,598,413 in silver. The result of this investigation is presented in the following tables:

STATEMENT SHOWING THE VALUE AND CHARACTER OF THE GOLD AND SILVER USED IN THE ARTS AND MANUFACTURES DURING THE CALENDAR YEAR 1885, AS REPORTED BY THE PERSONS AND FIRMS ADDRESSED.

GOLD.

Manufactures.	Number addressed.	Replied.	Manufacturing.	United States coin.	Stamped United States or refined bars.	Foreign coin.	Old jewelry, plate, and other old materials.	Native grains, nuggets, &c.	Wire or rolled plate.	Total
Chemicals	341	219	39	\$32,040	\$13,903	.....	\$6,063	\$29	\$4,341	\$56,376
Platers	634	348	226	257,741	218,831	\$801	178,510	24,295	15,537	695,715
Gold-pen manufacturers	34	22	11	7,433	34,886	2,867	990	3,526	6,753	56,455
Gold and silver leaf	72	51	46	58,150	527,453	2,000	31,050	19,700	39,001	677,354
Dental and surgical instruments	154	98	47	3,970	149,186	100	14,942	2,400	4,188	174,786
Spectacles and opticals.....	383	217	79	52,707	62,420	642	16,269	314	2,291	134,643
Miscellaneous ..	106	73	27	116,604	44,168	8,000	17,337	1,000	3,835	190,944
Jewelry and watches	6,330	3,352	2,232	2,298,733	5,183,187	164,503	582,554	451,629	485,241	9,165,847
Total	8,054	4,380	2,707	2,827,378	6,234,034	178,913	847,715	502,893	561,187	11,152,120

STATEMENT SHOWING THE VALUE AND CHARACTER OF THE GOLD, &c.—Cont'd.
SILVER.

Manufactures.	Number address- ed.	Replied.	Manufacturing.	United States coin.	Stamped United States or re- fined bars.	Foreign coin.	Old jewelry, plate, and other old materials.	Native grains, nuggets, &c.	Wire or rolled plate.	Total.
Chemicals				\$91	\$305, 165		\$73, 561	\$106	\$2, 165	\$381, 088
Platers				32, 824	1, 990, 587	\$25, 434	43, 191	12, 798	157, 922	2, 262, 756
Gold-pen manu- facturers				55	3, 191		249	558	5	4, 058
Gold and silver leaf					21, 881		708	20	23, 512	46, 121
Dental and sur- gical instru- ments				4, 682	107, 717	1, 401	7, 057	4, 450	2, 494	127, 801
Spectacles and opticals				2, 587	42, 424	155	2, 750	210	942	49, 068
Miscellaneous ..				838	5, 330		268	70	1, 017	7, 523
Jewelry and watches				92, 567	1, 360, 308	35, 718	117, 629	85, 060	28, 716	1, 719, 998
Total				133, 644	3, 836, 603	62, 708	245, 413	103, 272	216, 773	4, 598, 413

CHARACTER AND VALUE OF THE PRECIOUS METALS REPORTED BY MANU-
FACTURERS, JEWELERS AND OTHERS, USED BY THEM DURING THE CALEN-
DAR YEAR 1885.

Character.	Gold.	Silver.	Total.
United States coins	\$2, 827, 378	\$133, 644	\$2, 961, 022
Stamped United States or refinery bars	6, 234, 034	3, 836, 603	10, 070, 637
Foreign coin	178, 913	62, 708	241, 621
Old jewelry, plate, and other old materials	847, 715	245, 413	1, 093, 128
Native grains, nuggets, &c	502, 893	103, 272	606, 165
Wire or rolled plate	561, 187	216, 773	777, 960
Total	11, 152, 120	4, 598, 413	15, 750, 533

One of the most important results of the present inquiry is the clear indication of a reduced consumption in the United States of the precious metals in the industrial arts, and especially of a very largely reduced consumption of United States gold coin in the same way. The consumption of United States gold coin reported in response to this inquiry amounted to \$2,827,378, against \$4,875,587 reported in 1884 by almost exactly the same number of firms, a falling off of over \$2,000,000.

It is important, however, to state the probability that there is less duplication of consumption of material as between uses at first and second hand in the replies to this inquiry than heretofore. The reason of this is to be looked for in the fact that in the present inquiry the Bureau had the benefit of previous lists. Circulars were sent to such only of the firms on these lists as had replied to previous inquiries. Additional names were obtained from Zell's United States Business Directory for the year 1886, from recent business directories of large cities, and especially from a list of manufacturing jewelers, procured from Mr. C. F. Dennison, of Providence, R. I., who makes a business of compiling a special directory devoted to this branch of industry. In the preparation of the list of persons to whom circulars were sent, great care was taken in the recent inquiry to avoid as much as practicable reports of duplicate use: that is, to avoid obtaining returns from those who used material prepared and reported by other firms.

In order, however, to ascertain definitely whether the large falling off in the consumption of gold and silver indicated by the returns to this Bureau in the recent canvass, as compared with that of 1884, is attributable to an actual reduction in the use of the precious metals by reporting firms or to failure on the part of the Bureau to secure complete returns, a comparison has been made between the last two returns, for 1883 and 1885. This has been done by drawing from the books in which the replies are entered the names of all firms and individuals reporting a consumption exceeding \$50,000 in value per annum and comparing the separate reports of the same firms for the two years. The result of this comparison shows that some forty firms, comprising the largest gold and silver manufacturing establishments in the United States, reported to this Bureau a consumption during the calendar year 1885 of \$3,891,245 gold and \$987,248 silver, against \$5,624,014 gold and \$2,191,370 silver in 1883. Here, then, is an actual reported reduction in consumption by these firms of \$1,732,769 gold and \$1,204,122 silver.

A further examination of the returns of the same two years shows that this falling off of consumption has not been confined to large manufacturing firms, but has been general, and sufficient to account for the difference between the consumption shown by the two canvasses for the years 1883 and 1885. The cause of this reduction of consumption is to some extent at least a matter of speculation and belief but, judging from the remarks made in numerous instances by the reporting firms upon the returned blanks, abundant warrant is found for the conclusion that the reduction has been in large part, if not wholly, incidental to the depression in trade which has prevailed during the period covered by the inquiries in hand.

The question, however, is here less as to the cause of the falling off of consumption than as to the fact of the diminution as a matter of statistics of the precious metals. The latter inquiry has a direct and

very important bearing upon all real estimates of the coin circulation and stock of metallic money in the country, especially upon the estimates of the same by this Bureau from time to time, in which estimates specific allowances for industrial consumption are made with great pains to secure for this important factor the closest approximation to accuracy.

While some duplication may have crept into the returns from the canvass of 1883, and the reported consumption have been thus somewhat increased, it will be noted that no complementary amount by way of supplementary estimate was added by Director Burchard for the consumption of firms not heard from, and that the estimated consumption was in fact the same as actually reported to the Bureau. The recent canvass tends to prove that the estimate of the Director of the Mint based upon the returns for 1883 fairly approximately represented the consumption of gold and silver in the industrial arts at that time, especially when viewed by the light of the present returns for a period of less activity in general trade and manufactures, during which the consumption of the precious metals in the arts and manufactures is now proved to have fallen off to a degree fully equal to the difference indicated.

As the estimates of this Bureau of the stock of coin in the country depend for their correctness very largely upon the accuracy of the estimate of the annual consumption of United States coin in the industrial arts, the result of this inquiry demonstrates that the estimated stock of coin in the country, so far as this element is concerned, is below rather than above the actual fact.

The use of stamped United States bars as reported in this inquiry has increased largely in proportion to the total consumption, over that reported in 1884.

The amount of gold and silver consisting of stamped United States or refinery bars reported in that inquiry as having been used was, gold, \$7,135,218; silver, \$4,392,772. The amount reported in the present inquiry is, gold, \$6,234,034; silver, \$3,836,603. This also serves to indicate that less United States coin is being used for purposes of the manufacture of jewelry, &c., and more bars proportionally to the amount reported.

The amount of old jewelry is about the same as that reported in 1884, namely, gold, \$847,715; silver, \$245,413 in 1885: against gold, \$876,641; silver, \$221,951, in 1884. This amount, of course, is to be deducted in any consideration of the reduction of the annual metallic stock by consumption in the industrial arts, as it is simply old material used over.

The amount of wire and rolled plate reported to have been used does not differ materially from that of the inquiry of 1884, the amount reported in the present inquiry being, gold, \$561,187; silver, \$216,773.

A table is hereto appended showing the results of the five inquiries made by this Bureau on the subject of the annual consumption in the United States of gold and silver in the industrial arts.

REPORTED CONSUMPTION OF PRECIOUS METALS IN THE INDUSTRIAL ARTS IN
THE UNITED STATES FOR THE YEARS 1880, 1881, 1883, 1885.

Character of material used.	1880.		1881.	
	Gold.	Silver.	Gold.	Silver.
United States coins used.....	\$2, 408, 768	\$541, 834	\$3, 315, 882	\$72, 190
Stamped U. S. or refinery bars used	5, 511, 047	2, 749, 190	6, 171, 317	3, 127, 432
Foreign coin used	} 714, 378	173, 145	599, 524	188, 799
Old jewelry, plate, and other old materials...				
Native grains, nuggets, &c., used.....	.....	.....	.....	.....
Wire or rolled plate used .....	.....	.....	.....	.....
Total	8, 634, 193	3, 464, 169	10, 086, 723	3, 388, 421

Character of material used.	1883.		1885.	
	Gold.	Silver.	Gold.	Silver.
United States coins used	\$4, 875, 587	\$216, 637	\$2, 827, 378	\$133, 644
Stamped U. S. or refinery bars used	7, 137, 661	4, 552, 172	6, 234, 034	3, 836, 603
Foreign coin used.....	194, 400	154, 273	178, 913	62, 708
Old jewelry, plate, and other old materials ..	876, 641	221, 951	847, 715	245, 413
Native grains, nuggets, &c., used	702, 387	71, 557	502, 893	103, 272
Wire or rolled plate used	672, 688	239, 940	561, 187	216, 773
Total	14, 459, 464	5, 556, 530	11, 152, 120	4, 598, 413

It will be interesting to compare the results of the four inquiries by the Bureau as to the consumption of gold and silver in the industrial arts. The first inquiry for 1879 may be ignored, for the reason that being the first year that circular letters were addressed, the list of consumers was necessarily imperfect. This is apparent from the fact that out of thirty-five hundred and six persons addressed, only four hundred and forty-eight reported a consumption. This fact, coupled with subsequent experience, shows that the information obtained that year was far from complete.

The amount of United States gold coin reported by consumers to have been used during the calendar year 1880 in the industrial arts was \$2,408,768; in 1881, \$3,315,882; in 1883, \$4,875,587; and in 1885, \$2,827,378. The years 1880, 1881, and 1885 do not materially differ either in this or in the other items of consumption.

The amount of stamped United States or refinery bars reported to have been used in 1880 was, of gold, \$5,511,047; in 1881, \$6,171,317; in 1883, \$7,137,661; in 1885, \$6,234,034. The three years instanced substantially agree in this item also, while the year 1883 differs very largely from each of the three others in both items. The same is true of the totals. The total consumption of gold reported for the year 1880 was \$8,634,193; 1881, \$10,086,723; 1883, \$14,459,464; 1885, \$11,152,120.

The results of the inquiries for the years 1881 and 1885 are practically the same, while those of 1880 are but little less, a smaller number of consumers having reported. In 1883 the consumption of gold was over \$4,000,000 more, and of silver, \$2,000,000.

From the result of these inquiries I am led to conclude that the consumption of United States gold coin in the industrial arts does not now exceed \$3,500,000 per annum.

It may be thought that the deduction of \$30,000,000 made by me from the estimates of my predecessor, for the consumption of United States gold coin in the industrial arts for the years 1874-'80, a period of seven years, during which period no deduction was made for such consumption, may, in view of the results of the recent inquiry, have been excessive by several million dollars.

The estimate referred to was based upon the actual coin consumption reported to the Director in 1884, and the fact that there has been a reduced consumption since that time, owing to depression in business or other causes, does not necessarily render erroneous a larger estimate for prior years. Moreover, the comparison of the returns of the large firms reporting in 1884 and 1886 shows that the coin consumption estimated by the Director for 1884 was an actual reported use. The most complete of all the censuses when the estimate of \$30,000,000 was made, it must necessarily be taken as a basis for the consumption of the years preceding it, for an estimate of which no special material is available. Then, again, it may be said, as offsetting any excess in this estimate, the deductions for coin consumption made by the Director of the Mint for the years 1881, 1882, and 1883 as now reviewed were probably much less than the actual consumption.

This is evidenced from the fact that the estimate of coin consumption for 1883 was first estimated by Mr. Burchard at \$2,500,000, and afterwards returned at \$4,875,587. In round numbers it was so adopted by him, without additions by way of supplementary estimates for firms not reporting, as for the succeeding year, 1884. If the reduction of \$30,000,000 for the seven years ended 1880, therefore, be excessive, as it appears in comparison with the returns for 1885, though justified by the returns for 1883, the last and best available when the revision was made—the excess will be practically offset by the unduly small estimates for consumption in the three years 1881, 1882, and 1883, which, however, I have no warrant for changing in the tabulations themselves.

I shall therefore allow my revised estimate of 1885 to stand for the present, and hereafter, until further data are obtained, shall estimate the annual consumption of United States gold coin in the industrial arts at \$3,500,000.

It will be noted, however, from the foregoing, that no uniform rate of consumption can be assumed as from year to year or *per capita* of population.

The following table is appended, showing the results of the four inquiries and the estimates of consumption the same years:

CONSUMPTION OF UNITED STATES GOLD COIN IN THE ARTS.		
<i>Returns to the Bureau of the Mint for calendar years.</i>		
Year of published estimate.	Reported consumption of year previous.	Consumption estimated by Director, for fiscal year.
1881.....	\$2, 408, 768	\$3, 300, 000
1882.....	3, 315, 882	2, 700, 000
1883.....		2, 500, 000
1884.....	4, 875, 587	4, 875, 000
1885.....		5, 000, 000
1886.....	2, 827, 378	3, 500, 000

There is a tendency among some writers, in computing the stock of metallic money in the country, to overrate the consumption of gold and silver in the industrial arts. If, as in certain instances, the estimates by this Bureau are taken for the basis of such private estimates, it seems that allowances are made, perhaps for incompleteness of returns to this Bureau. This suggests the propriety of the following remarks.

While it is fair to assume that some firms and persons using gold and silver have not been reached by the circulars of the Bureau, the number is believed to be comparatively small. Besides, an increment representing their transactions has usually been allowed for in the Director's estimate itself, with the advantage of much special experience in the matter which is not always set forth in the reports of this Bureau.

A second circular was mailed to such of the firms addressed in the first instance as had not been heard from in response to the circular first issued, as follows:

[Supplementary circular.]

TREASURY DEPARTMENT, BUREAU OF THE MINT,
Washington, D. C., May 6, 1886.

SIR: A circular letter was addressed to you by this Bureau in March last, requesting that you state the amount of gold and silver used annually by your house in manufacturing or repairing. No reply having been received, I presume the matter has been overlooked. Obliging replies to the circular have been received from a large number of manufacturers.

In order to ascertain the proportion of firms responding to these inquiries as compared with the whole number addressed, and thereby to indicate the degree of approximation of the total obtained to the entire total of which the Bureau is in quest, replies from all addressed will be equally important, whether consumers or not.

This information is desired for the purpose of completing statistics of the consumption of the precious metals. If favored with a reply, it will be used only for the composition of aggregates, and will otherwise be treated as confidential.

Very respectfully,

JAMES P. KIMBALL,
Director of the Mint.

From the replies received it is well ascertained that by far the larger portion, if not indeed practically the entire number, of those not replying are really not engaged in business involving the consumption of gold and silver, and consequently might have been omitted from the list of persons addressed.

From the difficulty in ascertaining just what persons are direct consumers of the precious metals it necessarily happens that a much larger number are addressed than reply.

The reports to the Bureau may be claimed to fairly represent, within at least a small fraction, supplemented by its own estimates, the actual consumption in the industrial arts, and no further allowance can be warranted. In a separate chapter on the "Coin Circulation of the United States" the tendency above instanced has been pointed out with reference to certain estimates alluded to. What was there said does not exhaust the subject, as other published estimates might have been mentioned in which the same error occurs.

In order to supplement the information received from jewelers and manufacturers using gold and silver, manuscript letters were addressed to forty private refineries which the Bureau had reason to believe were engaged in the manufacture of bars for sale to jewelers and others. Of the thirty-seven firms addressed, still in business, twenty-seven responded. Of that number eighteen obligingly reported the value of the gold and silver contained in their bars furnished to dealers during the calendar year 1885, and the composition of the same. The remaining nine firms replying had not furnished any bars.

The result of this investigation shows the value of the gold and silver in the bars furnished dealers during the year by these eighteen refineries to have been as follows:

Gold	\$1, 928, 356
Silver	530, 828
Total	2, 459, 184

Classified as follows:

VALUE AND COMPOSITION OF BARS MANUFACTURED FOR USE IN THE ARTS BY PRIVATE REFINERIES DURING THE YEAR 1885.		
Classification.	Gold.	Silver.
Coin	\$345, 055	\$15, 212
Old plate, jewelry, &c.	310, 695	120, 378
Domestic bullion	1, 272, 606	395, 238
Total	1, 928, 356	530, 828

In addition to this, as will be seen from the following tables, the value of the bars issued from the assay office at New York during the year, and supposed to have been used in the arts and manufactures, was: gold, \$5,474,826.42; silver, \$4,680,822.06. Of this amount \$2,026,426.85

gold and \$3,680,588 silver consisted of domestic bullion, \$2,363,907.60 was the value of large gold bars redeposited for small bars taken by manufacturers and brokers. What proportion of this latter was from domestic production it is impossible to ascertain, but it was probably a large one. Of the bars prepared by the assay office at New York, there was used in the preparation old materials, jewelry, plate, &c., of which the intrinsic value was as follows :

Gold.....	\$579, 289 41
Silver.....	184, 015 32

The statement of the gold and silver bars issued from the mint at Philadelphia to persons and firms engaged in industrial arts during the year shows the value of such bars to have been—

Gold.....	\$458, 408 76
Silver.....	42, 020 69

Of the gold \$397,466.10 was manufactured from coin, and \$60,942.66 from old plate, jewelry, &c. No domestic bullion was used in the manufacture of these bars, while into the manufacture of silver bars, there entered a very small amount of at least new domestic silver. The mint at San Francisco reports the manufacture of no gold bars and only \$569.51 of silver bars, for persons and firms engaged in manufactures.

VALUE AND CLASSIFICATION OF DEPOSITS FOR GOLD AND SILVER BARS ISSUED FROM THE U. S. ASSAY OFFICE AT NEW YORK DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1885, SUPPOSED TO HAVE BEEN USED IN THE ARTS AND MANUFACTURES.

Classification.	Gold.	Silver.
United States coin deposits		\$314 51
Foreign coin deposits.....	\$65, 270 51	63, 077 21
Foreign bullion deposits.....	439, 932 05	752, 827 02
Plate, &c	579, 289 41	184, 015 32
Domestic bullion deposits	2, 026, 426 85	3, 680, 588 00
Large gold bars exchanged for gold coin and redeposited for small bars, less the charges and fractions paid in gold coin	1, 114, 621 73	.....
Large gold bars exchanged for gold coin and taken by manufacturers	1, 249, 285 87	.....
	5 474, 826 42	4, 680, 822 06

VALUE AND CLASSIFICATION OF DEPOSITS FOR GOLD AND SILVER BARS ISSUED BY U. S. MINT AT PHILADELPHIA, DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1885, TO PERSONS AND FIRMS ENGAGED IN THE ARTS AND MANUFACTURES.

Classification.	Gold.	Silver.
Coin	\$397, 466 10	.....
Old plate, jewelry, &c.....	60, 942 66	\$14, 621 09
Domestic bullion		99 78
New York assay office bars		27, 299 82
Total	458, 408 76	42, 020 69

VALUATION AND CLASSIFICATION OF DEPOSITS FOR GOLD AND SILVER BARS
ISSUED BY THE UNITED STATES MINT AT SAN FRANCISCO, DURING THE CAL-
ENDAR YEAR ENDED DECEMBER 31, 1885, TO PERSONS AND FIRMS ENGAGED
IN THE ARTS AND MANUFACTURES.

Classification.	Gold.	Silver.
	\$	\$
Coin		
Old plate, jewelry, &c		569 51
Domestic bullion		
Total		569 51

The following table exhibits the value of the gold and silver contained in bars prepared for persons and firms engaged in the industrial arts by the United States mints and by the assay office at New York, and also by private refiners, so far as communicated for the calendar year 1885 to this Bureau :

VALUATION AND CLASSIFICATION OF DEPOSITS FOR GOLD AND SILVER BARS
PREPARED BY THE U. S. MINTS AND THE ASSAY OFFICE AT NEW YORK, AND
BY PRIVATE REFINERS, DURING THE CALENDAR YEAR 18-5.
GOLD.

	Coin.	Foreign bullion.	Domestic bullion.	Old plate, &c.	Deposits for large bars not for use of man- ufacturers, re- deposited for small bars for use by manu- facturers.	Total.
New York as- say office ...	\$65,270 51	\$439,932 05	\$2,026,426 85	\$579,289 41	\$2,363,907 60	\$5,474,826 42
Philadelphia mint.....	397,466 10	.....	.....	60,942 66	.....	458,408 76
San Francisco mint.....	.....	.....	.....	.....	.....	.....
Private re- fineries	345,055 00	.....	1,272,606 00	310,695 00	.....	1,928,356 00
Total...	807,791 61	439,932 05	3,299,032 85	950,927 07	2,363,907 60	7,861,591 18

SILVER.

New York as- say office ...	\$63,391 72	\$752,827 02	\$3,680,588 00	\$184,015 32	.....	\$4,680,822 06
Philadelphia mint.....	.....	.....	27,399 60	14,621 09	.....	42,020 69
San Francisco mint.....	.....	.....	.....	569 51	.....	569 51
Private re- fineries	15,212 00	.....	395,238 00	120,378 00	.....	530,828 00
Total...	78,603 72	752,827 02	4,103,225 60	319,583 92	.....	5,254,240 26

The above items indicate the ordinary means of absorption of the precious metals in the arts and manufactures, mostly mechanical, but in part electro-chemical. One item of absorption, but one difficult to obtain specific information upon and therefore incomplete, is the small consumption of the precious metals in the chemical arts, especially in the preparation of gold and silver salts. Unlike the consumption of the precious metals in the case of coinage, the value of the articles manufactured in whole or in part of gold and silver depends very largely upon the cost of the manual labor employed upon them. This is true up to the proportion of some 50 per cent. of even such articles as contain the larger proportion of either metal.

The value of finished articles of gold and silver is thus generally so far above their intrinsic value, as measured by the value of raw material contained in them, that there is observed a tendency of the imagination to attribute to such manufactures a gross value, which covers not only the value of labor as well as of material, but also the unstable value represented by skilful handiwork and the arts of design. At the same time the degree of permanence in the value of the art and labor applied to such articles of manufacture greatly depends upon the caprice of fashion, and is thus subject to depreciation and, indeed, to actual disappearance. The value of the material in the case at least of gold, as was formerly the case likewise with silver, is practically permanent. On the other hand, the value of the labor employed is temporary, with a decided tendency to rapid deterioration, while the fictitious value derived from the arts of design declines still more rapidly as changes in the caprice of fashion are the more marked or frequent. This assertion is borne out every day in all public and private establishments where gold and silver articles of jewelry, ornamentation or utility, are returned to the melting pot, and at which final step in their individual round of usefulness their value is reckoned only at their value as bullion.

Another tendency of the imagination to erroneous impressions is from that property of the precious metals, namely their extreme divisibility, to which are due their adaptation and wide application in the arts, not only as gold and silver leaf, but also in gold and silver plating. It has been calculated that, supposing the average thickness of gold leaf to be one-thousandth of a millimeter, 10,000,000 square meters might be gilded with 1 cubic meter of gold worth about 65,000,000 francs (\$13,000,000).

The general use of articles of wear, ornamentation and decoration in which the precious metals are employed in greater or less proportion, but with about the same external effect, seems, in a cursory view of the matter, also to tend toward an exaggerated impression of the net value of the metals so employed, while in point of fact such net or material value is, in the case of the great majority of the articles referred to, very small, and indeed in the larger proportion of all, even minute. While modern luxury has multiplied the applications of gold and silver to articles of common use, it has likewise found the means to employ them effectively in minute quantities. On the other hand, the absorp-

tion of gold and silver in superficial work is by far more permanent, and their consumption in this way the more complete and deperditory, from the fact that when so employed they are seldom recovered after completing the office of a single application in extended surfaces, as in plating and gilding.

Absorption of the precious metals, on the other hand, in articles possessing material value is to be regarded as absorption or consumption only for limited periods, after which they are returned to the melting-pot. The richer the articles in point of material value the less their liability to deperdition or waste, except from natural wear and tear, to which all articles of gold or silver in use are subject, but which is seldom taken into account, as is sometimes the case with coin.

The following table exhibits the estimated annual consumption of gold and silver in the industrial arts by the principal nations of the world. This annual consumption is estimated at about \$57,000,000 for gold and nearly \$17,000,000 for silver. Of course this does not include any consumption by India or eastern countries generally, nor by Mexico or South American countries :

* ANNUAL INDUSTRIAL CONSUMPTION OF GOLD AND SILVER BY THE PRIN CIPAL NATIONS OF THE WORLD, FROM LATEST AUTHORITY.					
Countries.	Population.	Gold (fine ounces).	Value.		
United States (Burchard)	58,000,000	626,925	\$13,000,000		
England (mean of several authorities)	36,000,000	546,550	11,500,000		
France (Dumas)	37,000,000	401,875	8,600,000		
Germany (Soetbeer)	45,000,000	385,800	8,200,000		
Switzerland (Lardy) †	2,846,000	321,500	6,600,000		
Austria-Hungary (Nibauer)	37,800,000				
Other countries (Soetbeer)	230,000,000	450,100	9,500,000		
Total	446,646,000	2,732,750	57,400,000		

Countries.	Silver (fine ounces).	Coining value. (\$1. 2929)	Total value gold and silver.	Per capita.	
				Gold.	Silver.
United States (Burchard)	3,697,250	\$4,000,000	\$17,000,000	\$0 22 ⁴ / ₁₀	\$0 07
England (mean of several authori- ties)	2,604,150	3,000,000	14,500,000	32	08 ³ / ₁₀
France (Dumas)	2,411,250	2,800,000	11,400,000	23 ⁸ / ₁₀	07 ⁵ / ₁₀
Germany (Soetbeer)	2,636,300	3,000,000	11,200,000	18 ² / ₁₀	06 ⁶ / ₁₀
Switzerland (Lardy)*	835,900	1,000,000	7,600,000	2 31 ⁸ / ₁₀	35
Austria-Hungary (Nibauer)	835,900	1,000,000	1,000,000	.....	02 ² / ₁₀
Other countries (Soetbeer)	3,697,250	4,000,000	13,500,000	04 ¹ / ₁₀	01 ⁷ / ₁₀
Total	16,718,000	18,800,000	76,200,000		

* Consumption as cited by Ottomar Haupt, "L'Histoire Monétaire de Notre Temps," Paris, pp. 21, 22.
 † According to the census of Switzerland of 1870, the annual production of watches in that country for that year was 1,600,000, representing a total value of 88,000,000 francs. 37,969 persons were reported to be engaged in the business of watch-making in the four cantons of Switzerland, famous for that industry.—*Larousse Dictionnaire Universel*, Vol. 14, page 1221.

The following statement is converted from a table by Dr. Adolf Soetbeer.* It embraces the result of his examination into the consumption of the precious metals in the industrial arts by the various nations of the world, presumably for the year 1880:

GOLD.					
Countries.	Gross consumption of gold.		Deduction for old material used over.	Net consumption of gold.	
	Ounces.	Value.	Per cent.	Ounces.	Value.
United States	482, 250	\$9, 969, 000	10	434, 025 00	\$8, 972, 100
Great Britain.....	643, 000	13, 292, 000	15	546, 550 00	11, 298, 200
France	675, 150	13, 956, 600	20	540, 120 00	11, 165, 280
Germany	472, 605	9, 769, 620	20	378, 084 00	7, 815, 696
Switzerland ...	482, 250	9, 969, 000	25	361, 687 50	7, 476, 750
Austria-Hungary	93, 235	1, 927, 340	15	79, 249 75	1, 638, 239
Italy	192, 900	3, 987, 600	25	144, 675 00	2, 990, 700
Russia.....	96, 450	1, 993, 800	20	77, 160 00	1, 595, 040
Above countries together	3, 137, 840	64, 864, 960	.....	2, 561, 551 25	52, 952, 005
All other civilized countries	160, 750	3, 323, 000	20	124, 600 00	2, 658, 400
Total	3, 298, 590	68, 187, 960	.....	2, 689, 366 25	55, 610, 405

SILVER.					
Countries.	Gross consumption of silver.		Deduction for old material employed.	Net consumption of silver.	
	Ounces.	Value.	Per cent.	Ounces.	Value.
United States.....	3, 858, 000	\$4, 987, 200	15	3, 279, 300 00	\$4, 239, 120
Great Britain.....	2, 893, 500	3, 740, 400	20	2, 314, 800 00	2, 992, 320
France	3, 215, 000	4, 156, 000	25	2, 411, 250 00	3, 117, 000
Germany	3, 215, 000	4, 156, 000	25	2, 411, 250 00	3, 117, 000
Switzerland	1, 028, 800	1, 329, 920	25	771, 600 00	997, 440
Austria-Hungary	1, 286, 000	1, 662, 400	20	1, 028, 800 00	1, 329, 920
Italy	803, 750	1, 039, 000	25	610, 850 00	789, 640
Russia.....	1, 286, 000	1, 662, 400	20	1, 028, 800 00	1, 329, 920
Above countries together	17, 586, 050	22, 733, 320	.....	13, 856, 650 00	17, 912, 360
All other civilized countries	1, 703, 950	2, 202, 680	.....	1, 286, 000 00	1, 662, 400
Total	19, 290, 000	24, 936, 000	.....	15, 142, 650 00	19, 574, 760

In addition to the consumption in the industrial arts, the following table, compiled principally from official sources, is presented, showing the value of the gold and silver consumed in coinage during the calendar year 1885. This table is not entirely complete, for the reason that

* "Verwendung des Goldes und Silbers." Jena, 1881.

replies have not been received as yet from all the foreign Governments addressed; but it embraces substantially the coinage of the world for the calendar year 1885.

As will be seen from the totals, the value of the gold used in coinage was \$94,500,000; silver, \$96,750,000.

It will be safe to add some four or five millions for coinages of silver by South American countries—Bolivia, Argentine Republic, Brazil, Colombia, Honduras, &c.—which have not yet reported.

1885.		
COINAGES OF VARIOUS COUNTRIES—CALENDAR YEARS EXCEPT FOR MEXICO. [Compiled from official statistics.]		
Countries.	1885.	
	Gold.	Silver.
United States.....	\$27, 773, 012	\$28, 962, 176
Mexico.....	423, 250	25, 840, 727
Great Britain.....	14, 366, 677	3, 540, 719
Australia.....	21, 694, 857	213, 639
India.....	61, 322	20, 685, 407
Germany.....	1, 939, 443	577, 664
Austria-Hungary.....	2, 791, 959	3, 192, 493
France.....	55, 854	-----
Russia.....	20, 600, 000	962, 000
Cochin China.....	-----	246, 946
Monaco.....	164, 648	-----
Italy.....	635, 873	230, 831
Netherlands.....	280, 000	80, 400
Sweden.....	33, 500	* 131, 881
Spain.....	2, 425, 108	3, 678, 314
Portugal.....	246, 240	-----
Japan.....	1, 004, 005	6, 320, 927
Peru.....	-----	1, 326, 266
Chili.....	77, 580	564, 080
Total.....	94, 573, 328	96, 554, 470

* Includes the coinage of the Norwegian mint.

What proportion of this coinage consisted of recoinages (that is of light-weight coin withdrawn from circulation for recoinage, and coins of one country melted and converted at the mints of another country into its own coins), and also what amount of old jewelry, plate, &c., was used in the coinage of the year, it is very difficult to ascertain. In order, however, to arrive at some idea of the amount of new material actually consumed in coinage by the world, it is necessary to ascertain approximately these facts.

In the case of the United States the amount of light gold coins withdrawn during the year was \$370,358; the amount of foreign gold coin deposited at the mints and assay offices amounted to \$7,548,919; the amount of gold consisting of old jewelry, plate, &c., melted down was \$1,860,397. A portion of this, especially of the latter item, was paid

out again in the shape of bars, but it may be safe to say that some \$9,500,000 of the deposits of gold at the United States mints during the year 1885 for conversion into United States coins consisted of coins either of this or other countries or of old material remelted.

In the case of the Royal Mint at London the deposits of light-weight gold coin amounted during the year to about \$6,000,000.

At the Australian Mint the recoinage was small, being only about \$300,000 in gold.

At the Imperial Japanese Mint at Osaka the recoinages of both Japanese worn coins and foreign gold coins amounted to only about \$1,000.

Of the European nations generally, with the exception of Russia, it may be safe to say that by far the larger portion of the coinages of gold consisted of coins melted down. This amount may be placed at say \$8,000,000. The coinage of Russia consisted probably almost exclusively of the production of its own mines.

Here, then, we have for recoinage and old material used in coinage, say the following amounts in gold:

United States.....	\$9,500,000
Great Britain.....	6,000,000
Australia.....	300,000
Europe.....	8,000,000
<hr/>	
A total of.....	23,800,000

Deducting this from the coinage reported would leave the consumption of new material in coinages during the calendar year 1885 at about \$70,000,000. Estimating the world's annual production of gold at, say, \$100,000,000, the amount of such production consumed in the manufacture of coin during the year 1885 was about \$70,000,000. This leaves about \$30,000,000 for consumption of new material in the industrial arts. The entire annual consumption of gold in the industrial arts being about \$55,000,000, it follows that some \$25,000,000 of the amount consisted of gold coins. This is probably about the fact, for while in the United States the amount of gold coins used in the industrial arts is less than refined bars used for such purposes, the same is not the case in European countries where manufacturers of jewelry, &c., are dependent very largely upon coins for their stock of material.

In the case of silver, the proportion of coins melted for recoinage is small as compared with gold, for the reason that silver coins now have a value very largely enhanced above their bullion value, and hence rarely leave the country of their coinage except in the case of countries which, like Mexico, are large producers of silver, and whose mints are open to the free coinage of this metal.

In the United States the amount of United States silver coin deposited for recoinage during the calendar year 1885 amounted to \$701,778, of foreign coin to \$329,000, and the amount of old plate, jewelry, &c., deposited for remelting to \$459,589, all calculated at their coinage value

in United States silver dollars. Here, then, is an amount approximating \$1,500,000 of the silver coinage of the United States which consisted of silver coins and old material used over.

In Great Britain the amount of worn silver coin withdrawn from circulation during the year amounted to about \$1,000,000.

At the Japanese mint the amount of worn silver coins, both native and foreign, deposited during the fiscal year amounted to only about \$4,000.

It is safe to say that the value of the coins and old material melted down and used as a part of the silver coinage of the world for 1885 did not exceed 10 per cent. of the total coinage. As the total coinage of silver during the calendar year 1885 amounted to about \$100,000,000, it would follow that some \$90,000,000 of the coinage was of new material. Estimating the production of silver in the world at about \$124,000,000, would leave about \$34,000,000 of new material for consumption in the industrial arts.

COIN CIRCULATION OF THE UNITED STATES.

In the brief consideration of the subject of the coin circulation of the United States contained in my report to the Secretary of the Treasury for the fiscal year ended June 30, 1885, I called attention to the method employed by my predecessor of reaching conclusions on this important subject. I then took occasion to make certain modifications of previous estimates which, in my opinion, would tend to correct the totals which are carried along from year to year as a basis for annual additions in order to arrive at the current circulation for given dates.

With reference to the estimates of the coin circulation of the United States for July 1, 1884, published in the annual report of the Director of the Mint for that year, I also took occasion to state that the results there published were obtained by taking the estimate made by Dr. Henry R. Linderman, the first Director of the Mint under the coinage act of 1873, of the amount in the country on July 1, 1873, and adding the net coinage together with the net import of the United States gold coin each year, and deducting the net export of United States gold coin together with the amount used in the arts since the fiscal year 1880.

The estimate of Dr. Linderman, it was further explained, was made at a time most favorable for ascertaining the amount of gold and silver coin in the country. On July 1, 1873, gold was at a premium of $15\frac{1}{2}$ per cent. Nearly all of the coin in the country, with the exception of the Pacific coast region, was either in the United States Treasury or in the banks and not in active circulation.

Of Dr. Linderman's estimate of the gold coin in the country at that date, namely, \$130,000,000, over \$98,000,000 was shown by the official reports of the Treasurer of the United States and the Comptroller of the Currency to have been in the United States Treasury and National

banks. \$20,000,000 was the amount in circulation in the states of California, Nevada, and Oregon, as deduced from a very careful estimate at the time by Mr. Louis A. Garnett, of San Francisco. The estimate by this excellent authority was from twenty to twenty-five millions. An allowance of only some \$10,000,000 was made as being in banks other than national, and in the hands of the people of the entire country except the so-called Pacific coast states as above. This estimate was as follows:

“According to the official reports of the Treasurer of the United States and Comptroller of the Currency, there were held by the Treasury and national banks, at the close of the fiscal year ended June 30, 1872:

In coin	\$98,389,864 49
Estimated amount of coin in Pacific coast states and territories at that time.....	20,000,000 00
And in the hands of bankers and people elsewhere.....	10,000,000 00

*Total specie fiscal year 1872-'73 128,389,864 49”

The estimate of Dr. Linderman, therefore, was considered nearly a correct one, and if varying materially from the truth to have been below rather than above the actual amount of coin in the country.

It at once appeared, however, that from July 1, 1873, up to June 30, 1880, no deduction was made for the amount consumed in the arts and manufactures, for the reason, as stated by the Director in his report of 1881, that it was believed that the amount thus consumed would be offset by United States coin brought hither by immigrants on their persons, over and above the sum taken out of the country in like manner by travelers.

It seemed to me, however, open to doubt whether any considerable amount of United States gold coin is, as a rule, brought hither by immigrants. Mr. H. J. Jackson, secretary of the commission of immigration of the state of New York, stated that, in 1878, 79,801 immigrants arriving at the port of New York brought and exchanged at Castle Garden \$520,000 in foreign coin.†

It was believed that most and indeed substantially all the gold brought to these shores by immigrants on their persons is foreign coin, which as a rule is exchanged for United States money on arrival. Hence the conclusion that the amount of United States gold coin used

* Report Director of the Mint, 1874, page 19.

† The number of immigrants arriving in the United States during the year ending June 30, 1884, was 513,592. Estimating that each brought on his person the amount stated by Mr. Jackson for the year 1878—\$6.50—would make the amount equal to \$3,370,848. This, however, is not an element which enters into the estimate of the coin circulation of the United States because, as already stated, almost all foreign coin finds its way to the mints and public assay offices for remelting, or is again exported.

in the arts could be offset by the amount brought by immigrants on their persons seemed to me erroneous.

Further inquiries on the subject have at my request lately been instituted through Mr. Andrew Mason, superintendent of the United States assay office at New York. Interesting facts were elicited, as presented in the following communication:

UNITED STATES ASSAY OFFICE, NEW YORK CITY,
SUPERINTENDENT'S OFFICE,
May 29, 1886.

Sir: In response to your letter of 19th instant, I have made careful inquiries among the coin brokers "as to what extent foreign coin brought in by immigrants is sold again to out-going passengers, as compared with the proportion of the same which reaches the United States assay office or private refineries."

Messrs. Scully and Devitt (in Castle Garden) reported that, of the amount received by them (\$1,000,000 per annum) at least 75 per cent. is returned by passengers going back. "The past two years we have done but little melting, but in previous years at least 50 per cent. of our coin was assayed."

Six other leading firms expressed the opinion that nearly all the foreign coins brought by immigrants were sold again to out-going passengers. One of these (Messrs. Cantoni & Co.) estimated that, while the Italian immigrants brought not over \$20 each, they took at least \$500 when going back.

The estimates of the amounts bought and sold by each of these firms varied from \$500,000 to \$2,000,000 per annum. These included much coming from Chicago, New Orleans, San Francisco, and other cities.

To supply the demand of out-going passengers, British money is frequently brought from Canada.

Many immigrants bring with them United States coin obtained in the ports of Great Britain, France, Germany, &c.*

The foreign coin received in this office for some time has been chiefly from South America, West Indies, and Mexico.

As a result of the foregoing inquiry, I estimate the amount of foreign coin brought in by immigrants and sold again to outgoing passengers to be, say, \$6,000,000 per annum. The proportion of silver coin in this is small.

Very respectfully,

ANDREW MASON,
Superintendent.

DR. JAMES P. KIMBALL, *Director of the Mint.*

Not attempting a revision of the estimate of circulation given by the Director for July 1, 1884, without a consideration of the subject further than could be given to it immediately upon entering on the duties of Director of the Mint, I then thought it proper, for the purpose of my annual report for the fiscal year ended June 30, 1885, to deduct from the amount of gold coin stated by him to have been in the country on that date (\$551,632,442) the sum of \$30,000,000, as a moderate estimate

* The United States coin thus obtained at foreign ports by immigrants is doubtless coin carried out by returning immigrants, and exchanged for European coin on reaching their shipping destination. Not being manifested, therefore, and returned to the United States in the way indicated by Superintendent Mason, the amount of United States coin entering into these transactions, for any given period, does not affect the computations of this Bureau, as it may safely be assumed that the amount exported on the persons of travelers is more or less immediately offset by the amount imported in the same manner.

of the amount of gold coin consumed in the industrial arts during the period of seven years, 1874–1880 inclusive. The reports to the Director of the Mint of persons and firms engaged in the manufacture and repair of articles of ornamentation and use showed an actual consumption of gold coin for the year 1883 of over \$4,875,000. As the consumption was thought likely to have increased with the growth of population from year to year during this period, it was concluded that the gross estimate, as above, could hardly be far from the actual consumption.

From the returns made in response to systematic inquiries of my own instituted this year covering the calendar year 1885, some persons might be led to conclude, as more fully explained in the preceding section of this report, that the allowance of an average of some \$4,300,000 a year for consumption of United States gold coin in the arts during each of the seven years from 1873 to 1881 is somewhat excessive. This conclusion is now strengthened by the fact that the latest examination of the subject, with the advantage of accumulated experience on the part of this Bureau, discloses a consumption of only \$2,827,378 for the year 1885 of gold coin, against a reported consumption for the year 1883 of \$4,875,587.

Upon making such an allowance for consumption on the part of consumers not reached or not heard from, as warranted by the special circumstances of the canvass, there must be added to the reported consumption a certain amount, all things considered, which will bring up the consumption to some \$3,500,000. This estimate, as the last made, must be warranted, under all the circumstances of the case, notably the unusual willingness displayed by consumers to communicate, on this occasion, the total of their individual consumption of United States gold coin.

As explained in the preceding part of this report, a comparison of the returns of the same firms for different years shows an actual falling off the past year in the amount of gold and silver used. Besides, the allowance, for consumption in the arts, by the Director of the Mint for the years 1881, 1882, 1883, seems to me below the probable consumption in those years. In point of fact the consumption of United States gold coin allowed by Director Burchard for those years, in arriving at the metallic stock of the country, was less each year than the amount actually reported to the Bureau by firms as having been consumed during the first of these years—1881 (\$3,315,882). No allowance has ever been made for this obvious deficiency.

For this reason I have decided to make no change in the estimate of thirty millions for the coin consumption in the seven years 1874–'80, deducted by me in October, 1885, from my predecessor's estimates of coin circulation, except to qualify this item, as above, by making it cover, in addition to the coin consumption of the seven years named, the assumed deficiency in the estimated coin consumption for the ensuing three years 1881–'83.

On deducting \$30,000,000, therefore, from the estimate of the Director,

a revised estimate of the amount of gold coin in circulation on July 1, 1884, is reached, namely, about \$520,000,000.

No deduction for consumption in the arts was made from the amount of silver coin in circulation during the same period. Manufacturers use bars of silver rather than coin of an enhanced value. But little United States silver coin, therefore, is withdrawn more or less permanently from circulation.

With the brief time which in October last, so soon after entering upon the duties of Director, I had been able to give to the consideration of this important question, it seemed to me that the more correct method of arriving at an estimate of the stock of coin in the country would be to take as a basis an ascertained amount, or a conventional estimate at a given date, and to add each year the increase by coinage (less re-coinage) together with the actual gain by import of United States coin, and to deduct the actual loss by export of our own coin plus the estimated amount used in manufactures and the arts.

Reference was made to the circumstance that, instead of the aggregate returns of the mints and assay offices, the production of the mines of the country, as estimated from time to time by different official and other authorities, has sometimes been taken as the leading element in the account of the stock of gold. The other elements are the net imports or exports of bullion and coin by difference, as the case may be, and the total estimated consumption of bullion and coin in the arts.

In support of the method employed by this Bureau, it was considered, first, that the coinage of the country is a definitely known quantity; second, that the statistics of the importation and of exportation of bullion and coin are well classified at the custom-houses. The imports of bullion and coin are derived from the entries made by importers, in pursuance of section 9745, Revised Statutes, and article 335 of the Customs Regulations for 1884. The exports are derived from manifests filed with the collector of customs by shippers, as provided by section 337, Revised Statutes, and article 1242 of the Customs Regulations of 1884. Thus there seemed, as there still seems, no reason to doubt the accuracy of the customs figures as far as they go. It was considered that the most careful estimate that from time to time can be made in this country toward an approximation of its gold production from deposits of gold ores in the form of metalliferous lodes, from placers and alluvions, as native metal and alloys, and from its association in miscellaneous ores and base bullion, must be more or less hypothetical and to a large degree purely conjectural. Hence obvious objections to the employment of estimates of this nature as elements for aggregates, to which is to be added or from which is to be deducted, as the case may be, the net import or export of coin and bullion, especially as the returns of imports of foreign bullion seldom correspond, from year to year, with the deposits of the same description at the mints and assay offices. Thus, for instance, the total imports of gold bullion to the

United States, as reported by the custom-houses, during the year 1884 were \$8,849,237, all of which, with the exception of about \$1,000,000, was imported at the port of New York.

The deposits of foreign gold bullion for the same year at the mints and assay offices amounted to \$11,221,846; hence a difference of nearly \$2,500,000 between the reported imports of bullion and the amount deposited at the mints and classified as foreign. The assay office at New York alone reported as deposited there, during that year, foreign gold bullion amounting to \$10,843,743, an excess of \$2,000,000 over the reported imports. From this it seemed to follow, either that there is brought into the country bullion which is not entered at the custom-houses—as there is much reason to suppose—or, on the other hand, that the classification at the mints between foreign and domestic bullion, so largely entering into the direct estimates of production, is erroneous. Either alternative, as a fact, would, it was urged, render erroneous a statement, as sometimes proposed, based on the Bureau's direct estimate of production, in connection with the imports of bullion as reported by the Bureau of Statistics from returns of the custom-houses.

In my report for the fiscal year ended June 30, 1885, I therefore assumed my predecessor's estimate of the coin circulation of July 1, 1884, less \$30,000,000, as above, for coin consumption in the arts for the period of seven years previous to 1881. To this estimate I added the coinage of the fiscal year 1885 and the gain of coin by import, and deducted the deposits of United States coin for recoinage, together with the amount of coin estimated to have been used in the arts.

Since the above conclusions, drawn from my report for the fiscal year 1884-'85, were reached, a fuller consideration of the subject has led to further modification of the previous estimates of this Bureau. These I now proceed to discuss.

Now, continuing the annual estimates of the coin circulation of the United States down to the close of the calendar year 1885 for the present report, I have adopted the plan of my predecessor, which commends itself for several reasons, especially on the ground of its simplicity and the official nature of the returns which form its basis. This plan is to extend the tabulations of previous years brought down to the close of the preceding year, by adding to the aggregate thus obtained the net increase by coinage after deducting the amount of United States coin remelted.

Addition is made of the actual gain by imports of our own coin, after deducting the actual loss by export of the same class of coin. Deduction is made of an estimated amount used in the arts and manufactures. New material has been recently gathered for this estimate, which has been presented in a separate chapter. The consumption allowed in the revised estimate is based upon the returns of this recent canvass. The record of operations of the United States mints and assay offices are

thus supplemented by the returns of the custom-houses, as reported by the Bureau of Statistics.

A similar estimate, made by fiscal years, is contained in the annual reports of the Director of the Mint to the Secretary of the Treasury. For the purposes of general statistics the estimate for the calendar year is obviously of the greater utility from its conformity to the general usage of statistical science.

I proceed accordingly to give, on the cumulative plan above indicated, the usual estimate of the coin circulation of the United States down to the end of the calendar year 1885, and have taken occasion to revise certain former estimates affecting the final estimate, as will presently appear.

I shall afterwards refer to estimates of the same at the hands of other writers on different plans, which, I think, on examination will be found to be less simple than the plan adopted by this Bureau, and to contain more elements resting on hypothetical estimates and even conjecture, and to admit of such variances as commonly arise from what is understood as the "personal equation," and even from differences of personal temperament.

Several such estimates have been offered by way of exception to the previous estimates of this Bureau.

While the revision of the Bureau's former estimates now undertaken will be found to tend toward the results given by some of the authorities referred to, such results appear to have been derived, not from actual statistics or official returns, but from collateral information and personal belief as to the actually available (current or visible) circulation of metallic money as distinguished from what I may technically designate its *potential* circulation, or the circulation of record, which record, however, fully exhibits only a single side of the account. I make use of this term quite arbitrarily and for want of a conventional one, in order to distinguish the returns obtained through the mint service and custom-houses. The element of uncertainty as to the separate imports of foreign coin and of returned United States coin passing the custom-houses, which was one of importance previous to July 1, 1879, and which affected the estimates previous to that year, has since been eliminated. Still, an element of uncertainty is the aggregate consumption of the precious metals in the arts, as affected by certain industrial conditions which are not a matter of statistics, and which I have discussed in their proper place.

It will be obvious that as between the actual, current or visible coin circulation of the United States, and the potential circulation, as I have above distinguished it, there must exist an uncertain and varying factor corresponding to the amount of coin which is withdrawn from circulation, not only through its subversive use in place of bullion by small manufactures too numerous to be followed up, but also through its more or less permanent sequestration in numismatical collections,

and by loss from deperdition or waste, and undiscovered hiding (*caches*). While in this country the last-named item may be supposed to be now small and perhaps insignificant, from the frequency of savings-banks and safety deposits, and from the abundance of current or popular negotiable securities, it is nevertheless an item as to which information is desirable.

In some other countries, as in Mexico, the burial of coin for safety, long practised by certain classes of the population, seems to be still the custom, while the frequent failure of its recovery by the heirs of deceased persons leads to a considerable loss from registered circulation.

In Germany, according to Dr. H. A. Hagen, the construction of roads and railways brought to light many treasures of gold and silver coin or ware which, according to the date of the coins, had been several hundred years in the ground, where they had probably been hidden away in uncertain war times and afterwards forgotten or not found. In eastern Prussia alone, during the first half of this century, were found about one hundred pounds in golden Arabic or Kufic coins, which must have been hidden twelve hundred years and more. Another instance is the well known Hildesheim silver, found in 1867, near the battle-field of Arminius and Varus.

Iron or earthen pots filled with coins during the Thirty Years' War are, according to the same authority, by no means rare. The discoveries by Schliemann in Troy and Mycenæ, and similar findings in Italy, are many centuries older. In Italy such findings contain sometimes 30,000 coins. More than 50,000 denarii are quoted by Mommsen in about a dozen different findings.

The treasure hidden during the first and second century after Christ contains very large numbers of gold coins, and contrasts obviously with the small amounts during the next century.

The visitor at the Copenhagen museum will remember the heavy, solid Roman gold pieces found in the northern peat swamps. The treasures of the Roman Catholic Church and monasteries contain still in some countries an immense amount of precious metals, which may be considered as lost forever to circulation, except in extreme calamities. (Banker's Magazine, New York, October, 1883, page 295.)

Another element now missing from statistics and susceptible only with difficulty of record is the loss of coin by conflagrations on sea and land and by shipwreck.

By *Coin Circulation of the United States*, as the phrase is here technically used, is therefore practically included the aggregate output of the mints of the United States, less the amount recoined, together with the net amount imported as compared with the amount exported, and the amount consumed in the lesser avocations of the arts and manufactures in place of bullion. For it is in the form of bullion that the precious metals are generally made use of in what may be distinguished as the larger avocations of the same or related arts and manufactures, both mechanical and chemical.

Wherein the tabulation of this Bureau rests upon estimates and wherein upon actual returns will appear from the table itself.

In arriving at the stock of coin in the United States on January 1, 1886, I have added to my estimate of June 30, 1885, the coinage for the six months ended December 31, 1885, together with the imports of United States coin (not including trade dollars) and have deducted the amount of United States coin redeposited at the mints, together with the exports of United States coin and an estimated amount for consumption in the arts, based upon direct inquiries on the part of the Bureau instituted this year.

I have also deducted the sum of \$15,669,981, being the value of the gold bullion separate from gold coin in the mints and Assay Office at New York on June 30, 1873, and not heretofore separated from "gold coin and bullion." The total stock of bullion and coin in the country from 1873 to the close of 1878 was estimated by Dr. Linderman, Director of the Mint. My predecessor, Mr. Burchard, in his report for 1879, the first of the series prepared by him, published new estimates from 1873 of *coin only*. In these estimates the amount of bullion in the Treasury on July 1, 1873, was not eliminated from the estimated stock of \$135,000,000, as shown by Mr. M. L. Muhleman, late of the United States Treasury.

"That this estimate includes the bullion in the Treasury appears from the fact that the amount of coin and coin items reported by the Treasurer are used in preparing the estimate. The mints and assay offices held on July 1, 1873, about \$15,500,000 in gold bullion, of which \$10,000,000 was of light coin for recoinage. In the Mint Report for 1879 (Finance Report, p. 198) the estimate is continued from 1873 to 1879, and the same so furnished has been used in all subsequent estimates, notwithstanding the fact that the bullion is there disregarded and coin only considered."

It is true that over \$10,000,000 of this amount reported as bullion for 1873 was light gold coin awaiting recoinage, but as that is included in the coinage of subsequent years the whole of the item in question, namely, \$15,669,981, is now eliminated from an estimate for January 1, 1886, of the stock of gold coin in the country by deducting it from the last total of previous estimates.

After presenting a table compiled by himself to show the estimates of this Bureau from 1873 to 1885, Mr. Muhleman says:

"The manner in which the estimate for 1874 was made is not clear. The recoinage appears to have amounted to 18.7 millions. (See Finance Reports, 1874, p. 191; 1873, p. 472.)"

"The exports of coin (including foreign) exceeded the imports by 12.3 millions. This would make a net gain of 19.4 millions, or 7.8 millions less than the Mint Bureau's estimate. Probably the difference is due to the assumption that the estimate for 1873 was for November 1 of that year. (See Finance Report, 1879, p. 198.) This appears to be an error, however, since, in the report of 1875 (Finance Report, 1875, p. 311), Dr. Linderman, then Director, states that the estimate for 1873 was for July 1."

With reference to the above excerpts it is to be remarked, first, that the coinage of gold for the fiscal year 1874 was \$50,442,690; the amount of coin deposited for recoinage during the same year was, United States coin \$6,275,367; foreign coin, \$9, 13,882; total, \$15,589,249, leaving the net coinage \$34,853,441, which is the amount stated in the Director's estimate. (Finance Report, 1879.)

An examination of Mr. Muhleman's references fails to bear out his inference that the recoinage in 1874 appears to have been 18.7 millions. In the Finance Report for 1874, page 191, which is one of his references for recoinage in 1874, there is no statement of recoinage for that year, but only for the fiscal year ended June 30, 1873, while on page 472 of the Finance Report for the fiscal year 1873, which is the other reference for recoinage for the fiscal year ended June 30, 1874, the statement of recoinage is also for the fiscal year ended June 30, 1873, which is the fiscal year previous to the one in question.

Moreover, the amount deducted for recoinage in the Director's estimates of coin circulation is not the amount of coin actually *recoined* during the year, but the amount deposited at the mints for recoinage and technically reconverted into bullion, which, for obvious reasons, must be treated as withdrawn from circulation. The coin thus deposited at its standard bullion value, and for remelting into standard bars, is therefore included in all statements of deposits and purchases of bullion, under the proper classification.

Second. From Dr. Linderman's estimate of \$130,000,000 for the coin circulation of the United States down to June 30, 1873, my predecessor deducted for the excess of exports over imports for the fiscal year 1874, not the full amount for the fiscal year closing June 30, 1874, but (probably under the impression that his predecessor had brought the estimate for 1873 of \$130,000,000, as above, down to November 1, 1873, the date of the report for that year) gave the net exports, as compared with imports, for the eight months subsequent to November 1, 1873, the date of Dr. Linderman's report.

Dr. Linderman subsequently stated in his report of 1875 (page 21) that his estimate was for the date June 30, 1873.

The excess of exports of 1874 must be taken therefore as \$12,275,409 instead of \$7,620,695, thus affecting subsequent estimates by an error of the difference, namely, \$4,654,714.

This difference is obviously an error in previous estimates of the coin circulation of the United States, and is taken up in the present report as a separate item.

In the table given by Mr. Muhleman to show the estimates of the Bureau of the Mint from 1873 to 1885, the captions employed are unsuitable and misleading, from the fact that the several items do not express the same terms for various years. It has been only since the beginning of the fiscal year 1880 that the "net coinage," as technically understood in the reports of the Bureau, has been without reference to foreign coin deposited at the mints and assay office at New York. From 1873 to 1879, on the other hand, or prior to 1880, the imports and exports of coin were not classified separately at the custom-house as between United States coin and foreign coin. It was therefore, and still is, impracticable to obtain previous to 1880 the same data that have been

available for that year and since. Thus the table presented by Mr. Muhleman fails to exhibit under the captions employed the actual coin returns according to their technical divisions as uniformly employed in the records and reports of this Bureau, and, as I have shown, are manifestly totals made up of terms which are far from uniform.

The estimates of the Bureau since 1879 have been based upon the coinage of the United States mints, less United States coin deposited for recoinage, in connection with the net imports or exports of United States coin, as the case may be, with an estimated allowance for the amount of United States coin supposed to have been consumed in the industrial arts. From 1873 to 1879, inclusive, the estimates were prepared by deducting from the coinage of the mints the amount of United States and of foreign coin deposited for recoinage, and adding or subtracting the difference between the total imports and exports of coin, namely, adding differences in favor of imports and subtracting when in favor of exports.

It has come to be recognized as a rule that the foreign coin which comes to the United States through the custom-house finds its way to the mints and assay offices to be melted.

This will appear from the following table, showing the imports of foreign coin and bullion from 1879 to 1885, together with the amount deposited at the mints as foreign gold coin and as bullion during the same period.

TABLE COMPARING DEPOSITS OF FOREIGN GOLD COIN AND BULLION AT MINTS AND ASSAY OFFICES WITH NET IMPORTS OF SAME DURING THE SEVEN YEARS 1879-1885.

Fiscal year.	Net import foreign gold coin and bullion.	Foreign gold coin and bullion de- posited at the mints and assay offices.	Excess of amount de- posited at the mints as foreign gold coin and bull- ion over net imports of the same.	Excess of net imports of foreign gold coin and bull- ion over amount of same deposited at the mints.	Net excess of amount de- posited at the mints as for- eign gold coin and bullion over net im- ports of the same.
1879	\$1, 527, 560	\$2, 568, 616	\$1, 041, 056	.....	.....
1880	60, 686, 851	61, 627, 556	940, 705	.....	.....
1881	91, 715, 012	93, 133, 858	1, 418, 846	.....	.....
1882	28, 396, 169	33, 088, 617	4, 692, 448	.....	.....
1883	6, 941, 905	11, 633, 227	4, 691, 322	.....	.....
1884	13, 218, 602	15, 119, 195	1, 900, 593	.....	.....
1885	17, 603, 273	17, 546, 231	.....	\$57, 042	.....
Total	220, 089, 372	234, 717, 300	14, 684, 970	57, 042	\$14, 627, 928

From this table it appears that the amount of foreign gold coin and bullion deposited at the mints exceeded during the period of the last seven years the imports of foreign coin and bullion as classified at the custom-houses by about \$14,000,000. This is readily accounted for as foreign coin reaching this country upon the persons of travelers and immigrants. It will therefore be clearly understood that from the beginning of the fiscal year 1880 the custom-houses have classified the exports and imports of coin as "domestic" and "foreign"; and that the estimates of the Bureau commencing with 1880 have been based solely upon transactions in United States coin.

ESTIMATE OF STOCK OF COIN IN THE UNITED STATES JANUARY 1, 1886, BASED ON NET COINAGE AND NET IMPORTS AND EXPORTS OF UNITED STATES COIN.

United States Coin.	Gold.	Silver.	Total.
Circulation July 1, 1885.....	\$542, 174, 636	\$278, 824, 201	\$820, 998, 837
Deduction :			
For bullion in Treasury July 1, 1873, hitherto included in statements of coin ....\$15,669,981			
For error in exports for 1874 4,654,714			
	20, 324, 695	.....	20, 324, 695
REVISED CIRCULATION JULY 1, 1885.....	521,849,941	278,824,201	800,674,142
Coinage for six months ended December 31, 1885 ...	15, 532, 511	14, 492, 769	30, 025, 280
Net imports of United States coins (other than trade-dollars)		213, 848	213, 848
Total ..	537, 382, 452	293, 530, 818	830, 913, 270
Less deposits of United States coin for recoinage .	195, 301	136, 946	332, 247
Estimated United States coin used in the arts.	1, 750, 000	100, 000	1, 850, 000
Net exports of United States coin	1, 201, 698	.....	1, 201, 698
Total loss.....	3, 146, 999	236, 946	3, 383, 945
CIRCULATION JANUARY 1, 1886.....	534,235,453	293,293,872	827,529,325
Bullion in mints and assay offices December 31, 1885, available for coinage.....	72, 938, 221	4, 613, 832	77, 552, 053
Total metallic stock January 1, 1886	607, 173, 674	297, 907, 704	905, 081, 378

The result shows that the stock of coin in the country amounted on January 1, 1886, to \$827,529,325, of which \$534,235,453 was in gold; \$218,259,761 in standard silver dollars; and \$75,034,111 in subsidiary silver.

There was at the same time in the mints awaiting coinage gold bullion of the value of \$72,938,221, and silver costing \$4,613,832, which I have reckoned as part of the metallic stock of the country.

Thus the total gold coin and bullion available for coinage in the country on January 1, 1886, was \$607,173,674, and silver \$297,907,704, a grand total of \$905,081,378.

This stock appears at the same date to have been owned as follows:

STOCK AND OWNERSHIP OF GOLD AND SILVER COIN, AND

OWNERSHIP.	GOLD.		
	Bullion.	Coin.	Total.
Treasury	\$72, 938, 221	*\$75, 434, 379	\$148, 372, 600
National banks		†156, 353, 592	156, 353, 592
State banks, trust companies, and savings-banks.		§31, 255, 789	31, 255, 789
Other banks and private hands		271, 191, 693	271, 191, 693
Total	72, 938, 221	534, 235, 453	607, 173, 674

* Less outstanding certificates.

† Includes Treasury and clearing-house certificates.

§ Reported to Comptroller of the Currency by 1,015 banks, November 1, 1885; includes some silver.

RECAPITULATION.

OWNERSHIP.	BULLION.		
	Gold.	Silver.	Total.
Treasury	\$72, 938, 221	\$4, 613, 832	\$77, 552, 053
National banks			
State banks, trust companies, and savings-banks.			
Other banks and private hands			
Total	72, 938, 221	4, 613, 832	77, 552, 053

OF BULLION AVAILABLE FOR COINAGE, JANUARY 1, 1886.

SILVER.			
Bullion.	Standard dollars.	Subsidiary.	Total.
\$4, 613, 832	*\$72, 538, 725	\$27, 796, 430	\$104, 948, 987
.....	‡ 6, 940, 628	2, 060, 177	9, 000, 805
.....
.....	138, 780, 408	45, 177, 504	183, 957, 912
4, 613, 832	218, 259, 761	75, 034, 111	297, 907, 704

‡ Includes silver certificates.

RECAPITULATION.

COIN.			BULLION AND COIN.		
Gold.	Silver.	Total.	Gold.	Silver.	Total.
\$75, 434, 379	\$100, 325, 155	\$175, 769, 534	\$148, 372, 600	\$104, 948, 987	\$253, 321, 587
156, 353, 592	9, 000, 805	165, 354, 397	156, 353, 592	9, 000, 805	165, 354, 397
31, 255, 789	.....	31, 255, 789	31, 255, 789	.....	31, 255, 789
271, 191, 693	183, 957, 912	455, 149, 605	271, 191, 693	183, 957, 912	455, 149, 605
534, 235, 453	293, 293, 872	827, 529, 325	607, 173, 674	297, 907, 704	905, 081, 378

The main difference between the estimates of the metallic stock in the country by the Director of the Mint and the estimate by Mr. Muhleman, as well as by other statisticians, is to be found in the item of consumption in the arts.

This consumption is placed by Mr. Muhleman for the last twelve years at \$188,400,000 of new gold, an average of 15.7 millions a year. This of course includes bullion as well as coin, and necessarily excludes old material used over. Such a composite item by itself is fatal to the estimate in question.

The Director's estimates of consumption as applied to his own estimates of coin circulation are exclusively of United States coin, and have been placed at \$48,375,000 for the same period.

In order to show the difference between the two estimates the following table is appended:

CONSUMPTION OF GOLD IN THE INDUSTRIAL ARTS IN THE UNITED STATES.		
Fiscal year.	Estimate of Director of the Mint, consumption of United States gold coin.	Estimate by Mr. Muhle- man of con- sumption of gold coin and bullion.
1874	*\$30,000,000	\$12,600,000
1875		12,900,000
1876		13,900,000
1877		15,300,000
1878		15,200,000
1879		15,900,000
1880		16,700,000
1881	3,300,000	17,800,000
1882	2,700,000	18,000,000
1883	2,500,000	17,500,000
1884	4,875,000	17,000,000
1885	5,000,000	15,600,000
Total	48,375,000	188,400,000

*Includes short estimates for 1881, 1882, and 1883.

The replies received from manufacturers to whom circulars were sent by Director Burchard showed a consumption for the calendar year 1884 of gold, \$14,500,000; silver, \$5,500,000. But, as Director Burchard stated (see page 14, Production Report, 1884)—

“All of this, however, was not withdrawn from the existing stock of bullion and coin available for monetary uses, for reports and statements received from the mint at Philadelphia and the assay office at New York show for the same year the use of \$1,882,600 gold and \$414,600 silver, of old jewelry, plate, &c., which, deducted from the total consumption, would leave the amount of coin and new bullion consumed in the arts and manufactures about \$12,500,000 gold and \$5,000,000 silver.”

While the recent canvass made under my direction in regard to the consumption of manufacturers of jewelry, &c., during the calendar year 1885, shows that the above estimate of Mr. Burchard, taken from the returns for the calendar year 1883, is above the present actual consumption of new gold in the industrial arts, I have, for the purpose of comparison, assumed that the total amount of coin and new bullion consumed in the arts and manufactures each year from 1873 to 1885 was the amount estimated by Director Burchard, based upon the returns of 1883, namely, \$12,500,000 gold and \$5,000,000 silver. Assuming that this was the annual consumption for the entire period (twelve and a half years) would give a total consumption of gold of \$156,250,000. Deducting from this the sum of the Director's estimates of the consumption of United States coin for the period named, as shown in a preceding table, \$48,375,000, would leave as the consumption of new gold for the twelve and a half years \$107,875,000.

As to the consumption of silver, assuming the sum of \$5,000,000 as the estimated consumption annually, as derived from the returns for the calendar year 1883, the total amount of United States silver coin and new silver bullion consumed during the period named (twelve and a half years) would amount to \$62,500,000. Assuming that the amount of United States coin included in this was, say, \$200,000 per annum, or for the entire period \$2,500,000, would leave as the amount of new silver bullion consumed in the industrial arts \$60,000,000. The following table shows the basis of this estimate:

ESTIMATE OF CONSUMPTION OF THE PRECIOUS METALS IN THE INDUSTRIAL ARTS FROM JULY 1, 1873, TO DECEMBER 31, 1885.

	Gold.	Silver.
New bullion (exclusive of old jewelry, plate, &c., used over) based on reports of manufacturers for 1883, twelve and a half years....	\$107, 875, 000	\$60, 000, 000
United States coins, sum of the annual estimates of Director of the Mint:		
Gold	48, 375, 000	.....
Silver, say \$200,000 per annum .....	.....	2, 500, 000
Total	156, 250, 000	62, 500, 000

In order to contrast the two distinct modes referred to of compiling the estimate of the stock of gold in the United States, and for the purpose of supplying the proper data applicable to the exhibition of this matter from previous estimates of production by this Bureau, after revision in certain particulars already noted, I have to offer the following experimental table, based on production, and total imports and exports of both coin and bullion.

Items.	Gold coin and bullion.	Silver coin and bullion.
Stock (mainly in United States Treasury) June 30, 1873, estimated by Director Linderman	\$135, 000, 000	\$5, 000, 000
Production of the mines as annually estimated by Bureau of the Mint, from July 1, 1873, to December 31, 1885	457, 800, 000	525, 600, 000
Imports from July 1, 1873, to December, 31, 1885.....	384, 812, 948	152, 965, 880
Total stock	977, 612, 948	683, 565, 880
Deduct:		
Exports from July 1, 1873, to December 31, 1885	276, 743, 675	301, 297, 317
Balance.....	700, 869, 273	382, 268, 563
Revised estimate of consumption in the arts of bullion (not including bullion reused in the shape of old jewelry, plate, &c.) and of United States coin.....	156, 250, 000	62, 500, 000
Metallic stock January 1, 1886.....	544, 619, 273	319, 768, 563

If there be any error in the estimates of the Bureau it will probably have occurred in the estimate of the stock in the country prior to the close of the fiscal year 1879.

The stock of gold coin in the country at the close of the fiscal year 1879, according to the Director's estimate, was \$286,490,000. From this is to be deducted \$25,000,000 for consumption of United States gold coin in the industrial arts for the six years from 1873 to 1879, inclusive, for which no allowance was made. (In my revised estimate a deduction of \$30,000,000 is made for the seven years ending June 30, 1880, as above explained.) In addition, is to be deducted \$15,669,998, the value of the gold bullion in the mints and assay office at New York July 1, 1873, and included in the coin estimate of June 30, 1879, and \$4,654,714 for error in exports for 1874. There will thus be left as the revised estimate of the stock of gold coin in the United States July 1, 1879, \$241,166,003, as follows:

REVISED ESTIMATE OF THE STOCK OF GOLD COIN IN THE UNITED STATES
JULY 1, 1879.

Mr. Burchard's estimate, June 30, 1879	\$286, 490, 698
Deduct—	
Bullion included.....	\$15, 669, 981
Error in exports, 1874.....	4, 654, 714
Consumption of gold coin in the arts from 1873 to 1879, inclusive, estimated	25, 000, 000
	45, 324, 695
Revised estimate June 30, 1879.....	241, 166, 003

The statement of assets and liabilities of the Treasurer of the United States of July 1, 1879, shows that there was at that time in the Treas-

ury gold coin and bullion valued at \$135,236,474. Of this amount the mints and assay offices held at that date in gold bullion \$5,275,424. Hence there was at that date actually in the Treasury about \$130,000,000 of gold coin.

According to the statement of July 25, 1879, by the Comptroller of the Currency, of the resources and liabilities of the national banks, there was in the national banks on the 14th day of June, 1879, in gold coin, \$21,530,846.05, showing in the Treasury and national banks at the close of the fiscal year a total visible stock of gold coin amounting to \$151,500,000 against a total (potential) stock in the country of \$241,166,003.

The total coin stock in all the other banks and in the hands of the people thus to be deduced by difference appears therefore to have been \$89,666,003, an amount which seems a reasonable enough estimate.

It will be interesting to compare this estimate with that of Director Linderman of June 30, 1878, just one year previous, the last estimate made by him. This has been brought up to the close of the fiscal year 1879 by following the same method used by him.

Estimate of Director Linderman—

Gold coin and bullion June 30, 1878	\$244,353,390
Product of mines during fiscal year 1879	38,900,000
Importation of gold coin and bullion during fiscal year 1879	5,624,948
	<hr/>
	288,878,338

Deduct —

Exportation	\$4,587,614
Consumption in arts (same as 1878)	2,500,000
	<hr/>
	7,087,614

Total	281,790,724
Deduct bullion in Treasury	5,275,424
	<hr/>

Estimate of gold coin in country according to Dr. Linderman June 30, 1879	276,515,300
	<hr/>

Burchard's revised estimate	241,166,003
-----------------------------------	-------------

Thus it will be seen that the revised estimate of Director Burchard of the stock of gold coin in the United States on July 1, 1879, is less by some \$35,000,000 than the stock of gold coin based upon the estimate of Director Linderman for June 30, 1878, brought forward one year upon the same plan as adopted by him. There is reason to believe that Mr. Burchard's estimate of the stock of gold coin in the United States on July 1, 1879, is, with the revisions noted, not far from the actual fact.

In the Director's estimates the United States coin brought into the country upon the persons of immigrants is supposed to be offset by the amount taken out by travelers. Whether this is so or not is difficult to decide, but it is not thought that any considerable amount of United States coin is either brought into the country or taken out by travelers, and the excess cannot affect the coin stock to any appreciable extent. How much goes out of the country into Canada and Mexico that is not

entered at the custom-houses nor returned it is impracticable to determine. No deduction therefore can be made for it from the estimate of the stock of metallic money in the country.

As the custom-house returns now classify the imports and exports of coin between United States and foreign, it may confidently be claimed that an estimate based upon the net coinage of the United States coin, and upon the net gain or loss by import of United States coin, with a reasonable allowance for consumption of United States coin in the industrial arts, is the only scientific and exact method available for arriving at the actual (potential) stock of coined money in the country.

All other estimates, so far as I am aware, are based on an estimated production of the mines of the country in connection with the registered net imports of coin and bullion. All such estimates therefore assume for their leading factor a quantity which in this country has never been, nor probably ever can be, made a matter of positive statistics. Even when this factor has been worked out statistically to the point of a tolerably close approximation to the actual production of our mines of the precious metals by the method above instanced, it is apt to remain, as has often happened, a matter of contention as between other totals put forth, perhaps out of hand, without pretence of method or attempts at verification.

The statistics of consumption of the precious metals in the industrial arts in this as in all other countries are necessarily imperfect, as well as the most carefully made estimates of their production, especially in the United States, where the Government exercises no control over the operations of metal-mines nor derives a revenue by way of tax upon their output.

The most valuable contributions to the statistics of the production of the precious metals are, as above indicated, derived from the returns of the United States assay offices and mints, and from the custom-houses, which now exercise great care in classifying all entries of imports and exports of coin as well as of bullion. It is from these official sources, as elsewhere explained, that the statistics put forth by the Bureau of the Mint are mainly derived. These are supplemented, as likewise explained, by direct inquiry into the operations of mines, reduction works, and manufacturing industries.

While the estimate here given of the stock of metallic money and of bullion available for coinage may be slightly in excess of the real amount from the uncertainty as to the amount actually consumed in the arts and manufactures, and from the possibility that a considerable amount may have been taken out of the country in 1885, as well as in previous years, without entry at the custom-houses, the amount stated may safely be taken as an approximate estimate of the real amount of coin and of bullion available for coinage in the country.

The first of the following tables exhibits the manifested imports and

exports of bullion and coin to and from the United States from July 1, 1873, to December 31, 1885, as given by the Bureau of Statistics. The second table exhibits the production of the mines as estimated from official sources.

IMPORTS AND EXPORTS OF COIN AND BULLION, UNITED STATES.

Fiscal years.	Gold (bullion and coin).		Silver (bullion and coin).	
	Imports.	Exports.	Imports.	Exports.
1874	\$19, 503, 137	\$34, 042, 420	\$8, 951, 769	\$32, 587, 985
1875	13, 696, 793	66, 980, 977	7, 203, 924	25, 151, 165
1876.....	7, 992, 709	31, 177, 052	7, 943, 972	25, 329, 252
1877.....	26, 246, 414	26, 590, 374	14, 528, 180	29, 571, 863
1878.....	12, 976, 281	9, 204, 455	16, 491, 099	24, 535, 670
1879.....	5, 624, 948	4, 587, 614	14, 671, 052	20, 409, 827
1880.....	80, 758, 396	3, 639, 025	12, 275, 914	13, 503, 894
1881.....	100, 031, 259	2, 565, 132	10, 544, 238	16, 841, 715
1882.....	34, 377, 054	32, 587, 880	8, 095, 336	16, 829, 599
1883.....	17, 734, 149	11, 600, 888	10, 755, 242	20, 219, 445
1884.....	22, 831, 317	41, 081, 957	14, 594, 945	26, 051, 426
1885.....	26, 691, 696	8, 477, 892	16, 550, 627	33, 753, 633
Six months ended December 31, 1885	16, 348, 795	4, 208, 009	10, 359, 582	16, 511, 843
Total	384, 812, 948	276, 743, 675	152, 965, 880	301, 297, 317

PRODUCTION OF THE MINES OF THE UNITED STATES.

Period.	Gold.	Silver.	Total.
Fiscal year 1874	\$33, 500, 000	\$37, 300, 000	\$70, 800, 000
1875.....	33, 400, 000	31, 700, 000	65, 100, 000
1876	39, 900, 000	38, 800, 000	78, 700, 000
1877.....	46, 900, 000	39, 800, 000	86, 700, 000
1878.....	51, 200, 000	45, 200, 000	96, 400, 000
1879.....	38, 900, 000	40, 800, 000	79, 700, 000
July 1, 1879, to December 31, 1879*	20, 000, 000	20, 000, 000	40, 000, 000
Calendar year 1880.....	36, 000, 000	39, 200, 000	75, 200, 000
1881.....	34, 700, 000	43, 000, 000	77, 700, 000
1882.....	32, 500, 000	46, 800, 000	79, 300, 000
1883.....	30, 000, 000	46, 200, 000	76, 200, 000
1884.....	30, 800, 000	48, 800, 000	79, 600, 000
1885†	30, 090, 000	48, 000, 000	78, 000, 000
Total	457, 800, 000	525, 600, 000	983, 400, 000

* Half of fiscal year.

† Estimated about same as 1884 for purposes of comparison only.

DEPERDITION OR WASTE OF THE PRECIOUS METALS THROUGH WEAR OF COIN.

What is known as the legitimate or natural wear and tear of coin, or *abrasion*, as otherwise technically termed, is a subject which has been treated by numerous writers at different periods with reference to the gold and silver coins of different nations. An examination of what has been written upon the subject leads to the observation that the degree of abrasive wear and tear depends upon several conditions, such, first, as the nature of the composition or alloy; second, the relative size of coins; third, the year of date and assumed issue of the coin in point of duration of circulation; fourth, the activity of their actual circulation from hand to hand. A fifth condition is as to the relief (high or low) of the designs on the face and back of the coin, and the degree of milling and reeding.

It will be obvious that the subordinate variations under these several conditions must lead to great variations in the degree of abrasion.

First, the comparatively recent introduction of copper as an alloy of gold has greatly lessened the coefficient of abrasion.

Second, this coefficient appears to be in inverse ratio to the size of the coin.

Third, this coefficient must be reduced in the measure of the substitution of representative money in place of metallic coin.

Fourth, improvements in the art of die-sinking and cutting, and the introduction of low reliefs into the designs and devices of coins, likewise tend to the same effect.

These are the leading reasons to which must be referred the importance of the special coefficients of abrasion in certain coins of a given country as ascertained from time to time.

The precise determination of the coefficient of abrasion in special cases is a matter involving so few difficulties, and the physical experimentation in the process, in fact, so simple, that I am inclined to consider the discrepancies between the earlier authorities and the later results of examinations by good authorities to be due to differences in the prevailing conditions of the experiments themselves or of the coin subjected to examination, as affected by the several conditions which I have instanced above, rather than to question either the accuracy of the experiments, or the representative or average character of the coin selected for experiment. But it is true that the integrity of any average of a given selection of coin requires the observance of a parity of not only a few, but of all the conditions vital to the legitimate wear of coin such as above instanced. It seems to me this view of the subject is quite consistent with the changes in the character and circulation of the current metallic money of different nations, readily recognized to have taken place during the long period covered by the several estimates on the part of different writers, who have aimed to show the dep-

erdition or waste of the precious metals through the legitimate wear and tear of coin, by way of estimating for allowances from the available stock of coin and bullion in a given country, or in the civilized countries of the world.

Another source of the discrepancy here referred to is to be recognized in the fact that in the case of some of the experiments which have passed acceptance, as pertinent to the question, the coefficient of other than natural wear has been reached through the artificial condition of mechanical contrivances for producing frictional abrasion, and adopted as from an absolute parity of conditions which govern the practical wear of coins in active circulation. The results of experiments with frictional abrasion artificially set up tend to the exaggeration of the coefficient of natural abrasion, especially through the lack of protection to the surface of coin by adhesive dirt throughout the term of the experiment, as in the practical circulation of coin, while all parity of conditions of time as between natural and artificial abrasion must necessarily rest on arbitrary assumptions or prepossessions.

Haupt, as well as Soetbeer, on the other hand, seems to regard as exaggerated the coefficients of abrasion reported by the earlier experimenters; but as it seems to me without fully considering the changes of recent and present conditions not only in the character, but in the circulation, of the coin of the more civilized nations, as compared with remote conditions of the same kind.*

It is clear, however, that so variable are the conditions instanced in different countries, and in the same country from time to time, that the coefficient of abrasion can only be taken for a particular coin of a given country and for a given and indeed brief period.

In the United States, where both the legitimate and fraudulent abrasion of coin is probably below that of any other country, on account of the economy of its circulation from hand to hand, through its replacement as a circulating medium by representative money, bank cheques and fiduciary paper, it would be impracticable to apply to coin of this country any coefficient obtained abroad, or indeed even a coefficient—as found for a particular coin for a given period in one part of this country—to an entirely different part of the country, as, for instance, the Pacific states on the one hand and the Atlantic states on the other.

It must also be observed that the experiments of Cavendish and Hatchett upon English gold coins, made in 1798 and 1802, and also the experiments by the officers of the English mint in 1807, were made before the great recoinage, which began in 1817, and before the wear, especially of gold coins, had become reduced by the introduction of copper alloy, and down to which year the coins of Great Britain are well known to have come to a state of great degradation, not only by legitimate use but from flagrant practices. So, too, the mint experiments related by Lord Liverpool in 1787, on silver coin, and again in 1798,

* Soetbeer, *Verwendung des Goldes und Silbers*, p. 4.

when the silver coins of Great Britain were already in a very depreciated condition.*

The present well-known and aggravated deterioration of the gold currency of the United Kingdom of Great Britain has led, of late years, to several systematic inquiries, especially on the part of private investigators, with a view to the determination of the coefficients of abrasion, and of the deficiency corresponding to the aggregate loss in value of the coins in circulation, as well as with the object of devising some means for the restoration of their integrity.

The earlier of these to which reference may here be made was carried out by the late W. Stanley Jevons, professor of political economy, Owens College, Manchester, and a well-known author of several treatises on money and finance. In his early life Professor Jevons had practical experience in the matter of coinage, according to Mr. Palgrave, as assayer to the Australian Royal Mint at Sydney, from 1853 to 1858, or from his eighteenth to his twenty-third year. The results of his special inquiries referred to appeared in 1868.†

ABRASION OF THE SOVEREIGN.

To determine the wear of the English sovereign, Professor Jevons drew on several occasions, during the year 1868, sovereigns from the ordinary circulation at Manchester, and amounting in all to 434.

These were carefully cleansed and weighed upon a delicate chemical balance, and 280 of the full number weighed individually. Dividing these coins by date into decennial periods, and so determining their average weight, the actual deficiency from the mint weight was ascertained.

The following table by Jevons shows the average rate of wear of sovereigns of different ages in decennial groups. “The deficiency is calculated from the average weight of sovereigns issued from the mint, as determined by a weighing of 1,000 new sovereigns executed at the Bank of England in March, 1868, at the desire of the International Coinage Commission (Report, p. 94). Thus, while the standard weight is 123,274 grains, the weight of those issued is a small fraction less, namely, 123,260 grains.”

Years of issue.	Number of sovereigns weighed.	Average weight of the sovereigns.	Deficiency from mint weight.	Average date of coinage.	Average annual loss of weight.
		<i>Grains.</i>	<i>Grains.</i>		<i>Grains.</i>
1817-'29	31	121.40	1.86	1824.7	.043
1830-'39	22	121.92	1.34	'34.3	.040
1840-'49	42	122.16	1.10	'45.8	.051
1850-'59	129	122.72	54	'54.6	.042
1860-'67	208	123.04	22	'63.1	.050
Mint weight		123.26	.....	('67.5)	.....

In order to ascertain the complete average rate of wear of the whole, Jevons calculated the average weight of the sovereigns to be 7.9515 grams (122.71 grains). The mean average date of issue was 1854-'56.

* See Treatise on the Coins of the Realm in a Letter to the King, Oxford, 1805, p. 187. See Jacob on Precious Metals, Vol. II, p. 168.
† Journal of the Statistical Society of London, Vol. 31, 1868, p. 455.

The weight as issued from the mint being 7.9871 grams (123.26 grains), there is shown a mean deficiency of 0.0356 gram (0.55 grain) caused by 12.9 years' wear, counting up to the middle of the year 1867, and $0.0356 \div 12.9 = 0.00276$ gram (0.043 grain), the coefficient of annual wear of the sovereign.

Now, taking the sovereign when issued at the actual weight of 7.9871 grams, and as they cease to be legal tender when they fall below 7.9379 grams, it is easily calculated that about eighteen (17.83) years will reduce the sovereign below its legal-tender currency.*

"Of course," says Jevons, "it is not meant that every sovereign will be light after eighteen years' wear, for some are coined heavier than others or undergo less wear from accidental circumstances, but these will be balanced by others coined lighter or subject to more severe wear. But it would be hard to name a subject in which reasoning by averages may be more safely trusted than the present, because the coinage consists of an immense number of pieces which are constantly circulating through every part of the country and in every kind of business. A little reflection will show, I think, that, though the age of any individual coin is but a poor criterion of its weight, the age of 1,000,000, or 1,000, or even 100 coins drawn from the ordinary mixture in circulation must be a very sure criterion, as it is in the highest degree unlikely that even in 100 coins the accidental peculiarities of the history of any of those coins should influence appreciably the general average."

Professor Jevons's results as above tend to confirm experiments at the mint in the year 1833 by weighing parcels of 300 sovereigns coined in each of the years 1817, 1821, 1825, and 1829.

The average annual wear, or coefficient of abrasion, calculated by these data, is given by Jevons as follows:

Denomination.	Year.	Per annum.
		<i>Grain.</i>
Sovereigns	1817	.034
Do.....	1821	.047
Do.....	1825	.051
Do.....	1829	.045

Assuming that the proportion of sovereigns in circulation of a greater age than eighteen years is equivalent to the proportion of illegally light sovereigns, and that the sovereigns coined since the beginning of 1848 (twenty years), or, to be precise, 1850 (eighteen years), are of legal weight and the others light, Jevons was able to deduce the percentage of the whole number of sovereigns then in the kingdom, estimated at 64,500,000, no longer of legal currency, at 31.5 per cent., 20,317,500,

* In a later work by Professor Jevons it is stated that Dr. Farr has shown that certain considerations overlooked in his own calculations would reduce the estimate of the legal life of a sovereign from eighteen to fifteen years, and that, on the other hand, Mr. Seyd thinks that twenty years might be adopted as the legal age of the sovereign.

Taking the previous calculation of Professor Jevons as a basis for the average life of a sovereign and half sovereign at 17.9 and 11.6 years, respectively, Mr. John Bid-dulph Martin, as appears in the text farther on, assumed in 1880, on the other hand, that the faster rate of wear and tear in the earlier years brings down the periods to 16 and 11 years, respectively. (Jevons: *Money and the Mechanism of Exchange*. New York. 1875. 157.)

corresponding to a deficiency in value of £200,000. Mr. John Biddulph Martin, in 1882, calculated by a different process that nearly 55 (54.7) per cent. of the gold coinage was at that later period deficient in weight.*

In confirmation of his own estimate, Mr. Martin relates that out of 162,000 sovereigns sent to London on the failure of the City of Glasgow Bank in 1878, 55.5 per cent., or 90,095, of them were light.

Another case of actual experience quoted by Mr. Martin was that of the West of England Bank, when its till money was collected upon its failure and sent up to the Bank of England.

Out of 64,500 sovereigns, 23,945 or 37.1 per cent. were found to be light; and out of 32,500 half-sovereigns, 20,777, or 63.9 per cent., were found to be light.

Jevons calculated that the average age of the sovereigns in the Bank of England is 7.14 years, whereas the average age of the whole circulation of sovereigns in the United Kingdom is 15.35 years, or more than twice as long.

Jevons proposed to calculate the actual deficiency of weight and value of the currency of Great Britain as follows: For sovereigns, namely, by multiplying 15.35 years, the average age of the sovereign, into the coefficient of abrasion as obtained by him, namely, 0.00276 gram, or 0.04236 grain. The average deficiency of each sovereign, therefore, is 0.0424 gram, or 0.66 grain, amounting to 0.53 per cent.

On the total quantity of 64,500,000 sovereigns, estimated by Jevons as in circulation in 1868, the corresponding deficiency would amount to £341,850.†

The whole of this, however, would be covered by the legal allowance for wear of 0.63 per cent. (0.050 gram or 0.774 grain), if evenly distributed throughout the whole amount of currency in circulation.

The old and new coins must therefore be considered apart.

In a sum of 100,000 sovereigns, as in ordinary circulation, Jevons calculated the deficiency as follows:

Years of coinage.	Number of sovereigns in 100,000.	Average deficiency of each piece.	Value of de- ficiency in 100,000 £.
		<i>Grains.</i>	<i>£.</i>
1817-'19	207	} 1.874	116
1820-'29	7,402		
1830-'39	6,979	1.354	77
1840-'49	16,935	.829	114
1850-'59	28,612	.554	128
1860-'67	38,246	.234	71
Australian	1,619	.274	2
	100,000	.....	508

* Journal Institute of Bankers, Vol. 3, p. 297.

† Three hundred and thirty thousand pounds, as given in round numbers by Jevons.

ABRASION OF HALF-SOVEREIGNS.

By the same process 178 half-sovereigns, drawn from the ordinary circulation of Manchester, were examined by Professor Jevons, with results as follows:

Years of issue.	Number of half-sovereigns weighed.	Average weight of half-sovereigns.	Deficiency of weight.	Average date of coinage.	Average annual loss of weight.
		<i>Grains.</i>	<i>Grains.</i>		<i>Grains.</i>
1817-'49	32	60.199	1.468	1844.5	.064
1850-'59	86	60.857	.780	'55.7	.066
1860-'67	60	61.298	.339	'63.2	.079

Taking the average annual wear of the half-sovereign at 0.069 grain, the length of time during which it will remain of full weight was found as follows:

	Grains.	Grams.
Standard weight of half-sovereigns.....	61.637	3.9938
Least current weight of half-sovereigns.....	61.125	3.9609
	.512	.0329

Hence, $\frac{.512}{.069} = 7\frac{1}{2}$ years.

The proportion of light half-sovereigns was ascertained to have been in 1868 about 47 per cent. on the average of the whole country.

On a total quantity of £12,000,000 of half-sovereigns this will amount to just five and two-thirds millions sterling, and the annual cost of the wear will be at least £13,000, or about three times as great in proportion to the value of the coin as in the case of sovereigns.

By a process followed out as above in the case of sovereigns it was ascertained that the deficiency in the half-sovereign circulation amounted to just 1.1 per cent. in value, but as .83 per cent is covered by the legal allowance for wear, there remained the average illegal deficiency of .27, or quite five shillings in £100.

Jevons calculated from the total circulation with reference to the date of issue and allowance for new pieces of weight, that the whole of the light gold in circulation in 1868 was:

Denomination.	Value.	Number of pieces.	Deficiency in value.
Sovereigns	£20,300,000	20,300,000	£200,000
Half-sovereigns	5,700,000	11,400,000	100,000
	26,000,000	31,700,000	300,000

The experiments of Professor Jevons, here given in brief, were confirmed in 1882 by John Biddulph Martin.*

* Journal of the Institute of Bankers, vol. 3, p. 297.

In the course of these experiments Mr. Martin followed in part the lines previously laid down by Professor Jevons.

From several thousand sovereigns taken from those received in the course of business, one hundred of each decade, divided as near as might be in equal parcels, from 1850 to 1880, he was enabled to select ten of each year of issue.

Their actual weight was subtracted from their standard weight and the average deficiency per coin unit readily ascertained. By dividing this deficiency by the number of years that the coin had been (nominally) in circulation, the average annual loss by wear and tear was found to differ considerably—from .0258 grain in the coins of 1835, to .0785 grain in those of 1859.

Taking the mean of all these results, the mean annual wear and tear per coin, or coefficient of abrasion, was found to be .04325 grain—a result exactly in accordance with that arrived at by Professor Jevons by another mode of calculation.

From the number of sovereigns scheduled in the returns made to Mr. Martin the number of coins of each year actually in circulation per 100,000 was ascertained.

The probable deficit by wear and tear of each 100,000 coins was reached by multiplying the number of years circulation into the coefficient for mean annual wear and tear, and applying the result to the number of coins estimated to be in circulation in each year. But from the number (15,364) scheduled in the returns made to him the number of coins of each year actually in circulation per 100,000 had already been ascertained.

Multiplying, therefore, the number of years' circulation by the coefficient of abrasion or mean annual wear and tear, and applying the result to the number of coins estimated to be in circulation each year, the probable deficit by wear and tear of every 100,000 coins was arrived at.

This process is shown very nearly at full length in a tabular exhibit in which average loss by abrasion gradually diminishes in successive years of issue until between 1865 and 1866 the turning point is reached. While all above the first date are on an average light, all below it are on an average heavy.

The light coins are shown to be 54,701 in 100,000, and to fall short of their standard weight by 67,859.279 grains, corresponding to a loss of £637 8s.

Another tabular exhibit is furnished by Mr. Martin giving the result of a like experiment with half-sovereigns. The scarcity of half-sovereigns of early date renders the first part of the table irregular and ineffective.

From this experiment it was shown that the line between light and heavy coins occurs about the year 1871, all above the former, 53,929 in number, being light, corresponding to a deficiency of 54,021.432 grains, or £480 16s. per 100,000 half-sovereigns, or £961 12s. per £100,000 in half-sovereigns, as against £637 8s. in sovereigns.

As noticed by Mr. Martin, a disturbing element in all such calculations arises from the fact that coin does not always pass into active circulation immediately corresponding to its date. This fact tends to shorten the ascertained life of a given coin.

Mr. Martin cites an example of a bag of 1,000 sovereigns obtained from the Bank of England in 1881, consisting entirely of new coins of 1873.

Taking the previous calculation of Professor Jevons as a basis for the average life of a sovereign and half-sovereign at 17.9 and 11.6 years, respectively, Mr. Martin assumes, on the other hand, that the faster rate of wear and tear in the earlier years brings down the period to sixteen and eleven years, respectively.*

Mr. R. H. Inglis Palgrave in 1883, in a paper contributed to the *Journal of the Institute of Bankers*, estimates the circulation of gold in Great Britain and Ireland, divided between full weight and light coins, as follows :

Circulation.	Heavy.	Light.	Total.
Sovereigns	£36, 000, 000	£44, 000, 000	£80, 000, 000
Half-sovereigns	9, 000, 000	11, 000, 000	20, 000, 000
Total.....	45, 000, 000	55, 000, 000	100, 000, 000

In this table Mr. Palgrave applies the percentage of light coin ascertained by Mr. Martin to his own estimate of gold in circulation, divided also according to the calculations in Mr. Martin's paper. (*Journal Institute of Bankers*, vol. 4, p. 177, London; 1883.)

The excessive loss in English gold coin through wear is attributed by Feer-Herzog to a less enduring property of their alloy, which is still maintained on the duodecimal system proposed by Hatchett in the proportion of one-twelfth. Jevons, however, appears to consider that the excessive abrasion of English gold coin is probably still more due to the rapidity of its circulation, as compared with that of the gold coin of the states comprised under what is commonly known as the Latin Union.

The greater rapidity of the circulation in English light coins, referred to, has been the subject of comment by the same writer, by Martin, and by Palgrave, growing out of what is known as the "picking and culling" process, whereby over-weight coins are "garbled" or segregated by the public, and only full-weight coins used for payment to the Bank of England. The tendency of such an eccentricity of the coinage, it is agreed, is to protract the integrity of the full-weight coin held by the Bank of England through the economy practised in its use, and to render the light coin still lighter by throwing upon it the whole function of active or popular circulation.

This eccentricity in the English circulation above referred to is in contravention of that provision of the coinage act of Great Britain which requires that where any gold coin of the realm is below the current weight as provided by the same act, "every person shall, by himself or others, cut, break, or deface any such coin tendered to him in payment, and the person tendering the same shall bear the loss."†

Local differences in the degree of wear of gold coin were discovered by Jevons in the course of his experiments above referred to. He found the manufacturing and mining districts of England to possess

* *Institute of Bankers*, vol. 3, p. 317.

† *Coinage act of 1870*, Section 7.

the newer coin, and the proportion of old coin, to increase as one passes from urban neighborhoods into purely agricultural counties. The greatest proportion of old coin was found to occur in the eastern and southeastern counties, although within the vicinity of the metropolis. The newest currency was found to be in Manchester, this fact being confirmed by a separate excellent enumeration of 3,358 sovereigns procured for him by a Manchester bank. Nearly one-half the sovereigns current in Manchester proved to have been coined since the beginning of 1860. London was found to approach very close to the general average of the kingdom, except for the unusual infusion of Australian coins.*

Mr. Ansell remarks that Jevons shows indisputably that at the west end of London the coins suffer by rough handling less than in the east end.

Mr. John Miller, of the weighing room of the Bank of England, in 1859 found a loss of £1 6s. 7d. in a lot of one hundred sovereigns of 1820.

Ansell also quotes an exhibit by Mr. William Miller, cashier of the Bank of England. Besides the usual determinations of loss of weight, the loss of volume is given in terms of one hundred parts, as follows :

RESULTS OF SOME CAREFUL EXAMINATIONS MADE IN 1858 OF LIGHT GOLD AND SILVER COIN OF THE EARLY YEARS OF THE PRESENT SYSTEM OF COINAGE, 1817 TO 1825, TAKING 1822 AS THE MEAN OF THOSE YEARS.†

Denominations.	Mint weight of each coin.	Mint weight of £100 worth.	Weight of £100 worth of old coin.	Loss in 36 years, 1822 as the mean.
	<i>Ounces.</i>	<i>Ounces.</i>	<i>Ounces.</i>	<i>Ounces.</i>
Sovereigns.....	.25682	25.682	25.360	.322
Half-sovereigns.....	.12841	25.682	25.070	.612
Half-crowns.....	.4545	363.636	345.850	17.786
Shillings.....	.1818	363.636	315.575	48.061
Sixpence.....	.0909	363.636	296.950	66.686

The above data applied to 100 years give the following results:

Denominations.	Mint weight of £100 worth.	Loss of weight of £100 worth in a century.	Loss of value in a century.	Loss of weight of each piece in a century.	Loss of volume from 1,000 parts in a century.
	<i>Ounces.</i>	<i>Ounces.</i>	<i>£</i>	<i>Ounces.</i>	
Sovereigns.....	25.682	.895	3.485	.00895	35
Half-sovereigns.....	25.682	1.700	6.620	.00850	66
Half-crowns.....	363.636	49.406	13.587	.06176	136
Shillings.....	363.636	133.503	36.713	.06675	367
Sixpence.....	363.636	185.239	50.941	.04631	509

* Jevons, Journal Statistical Society, op. cit., p. 449.

† The Royal Mint, London, 1871, p. 66.

The experiments above referred to are based upon standard weight without reference to standard fineness, oscillations in which are determined with more difficulty from the necessity of their observation exclusively at the hands of assayers and more than ordinary experts. Yet it is obvious that no strictly accurate determination on a large scale of the value corresponding to the loss by physical abrasion can be accepted without taking into account or at least observing the qualitative as well as quantitative conditions of the question.*

Valuable statistics, however, are within reach on this subject from the records of at least the mints of Great Britain and of the United States, not only in the annual reports of the trial of the pyx in London, corresponding to the report of the annual assay commission of the United States Mint service, but also from the continual examination of test coins from averages of coiners' weekly deliveries at the several coinage mints of this country, conducted without interruption by the assayer of the Bureau of the Mint.

TABLE SHOWING THE NUMBER OF PIECES, AVERAGE WEIGHT, AND FINENESS OF THE PYX COINS OF THE ENGLISH GOVERNMENT.†

Year.	Sovereigns.			Half-sovereigns.		
	No. of pieces.	Weight.	Fineness.	No. of pieces.	Weight.	Fineness.
		<i>Grains.</i>			<i>Grains.</i>	
1881‡.....						
1882‡.....						
1883.....				5	61.636	916.5
1884.....	3	123.328	916.5	3	61.627	916.6
1885.....	3	123.242	916.6	3	61.630	916.7

* See Ansell, op. cit., p. 53.

† From the verdict of the jury of the Goldsmiths' Company at the trial of the Pyx. See Annual Reports of the Deputy Master of the Mint.

‡ No gold coinage.

The following table, compiled from the official records of this Bureau by the Assayer of the Bureau, Dr. W. P. Lawver, shows the average weight and fineness of the coinage of the United States for the past five years from monthly and annual tests.

TABLE SHOWING THE NUMBER OF PIECES AND AVERAGE WEIGHT AND FINENESS OF THE COINAGE, BY CALENDAR YEARS, ASSAYED AT THE ANNUAL ASSAY AND MONTHLY AT THE BUREAU OF THE MINT.

GOLD COINAGE.

Denomination.	Year.	Monthly.			Annual.		
		No. of pieces.	Weight.	Fineness.	No. of pieces.	Weight.	Fineness.
Double eagles	1881	23	516.000	899.897	22	515.927	900.050
	1882	47	515.989	899.865	20	516.040	899.814
	1883	82	515.950	899.819	58	515.988	899.739
	1884	77	515.987	899.924	77	516.001	899.995
	1885	49	515.926	899.882	33	515.935	899.789
	First 6 months, 1886.						
Eagles	1881	63	257.945	899.880	51	258.022	899.809
	1882	37	258.052	899.785	76	257.965	899.949
	1883	12	257.963	899.858	45	257.999	899.863
	1884	14	257.969	900.009	26	258.088	899.860
	1885	20	257.996	899.926	12	257.977	899.955
	First 6 months, 1886.	35	257.982	899.936			
Half-eagles	1881	58	128.951	899.916	59	128.981	899.922
	1882	43	128.969	899.923	56	128.984	899.798
	1883	9	128.938	899.855	43	128.988	899.981
	1884	21	128.956	899.915	23	129.011	899.908
	1885	68	128.972	899.933	23	129.005	899.906
	First 6 months, 1886.	65	128.969	899.902			
Three dollars	1881						
	1882						
	1883				1	77.370	900.100
	1884				2	77.375	899.900
	1885				1	77.360	900.033
	First 6 months, 1886.						
Quarter-eagles	1881						
	1882						
	1883				3	64.503	899.800
	1884				2	64.500	900.000
	1885				1	64.430	900.033
	First 6 months, 1886.						
Dollars	1881						
	1882						
	1883				1	25.600	900.000
	1884				8	25.776	899.825
	1885	5	25.756	899.980	3	25.920	899.750
	First 6 months, 1886.						

In the case of the gold coin of the United States, tested upon a large as well as upon a small scale, all old coin have hitherto been found the same as the new, strictly within the legal limit of tolerance of fineness, and about the same as new coin.

Upon the recoinage in 1873 of \$16,000,000 of light gold coin, the fineness was found in no single melt to be below 899.40.

The fineness ran as follows :

Denomination.	Value.	Fineness.
Dollars	\$2,000,000	899.96
Do.....	2,900,000	899.99
Do.....	2,000,000	899.90
Quarter-eagles.....	3,085,000	899.99
Do.....	2,855,000	899.94
Do.....	15,000	899.80
Half-eagles	915,000	899.99
Do.....	45,000	899.94
Do.....	85,000	899.80
Half and double eagles.....	100,000	899.94
Quarter, half, and double eagles.....	1,000,000	899.71
Do.....	1,000,000	899.40

No loss corresponding to the loss incurred in remelts of old English coin, instanced by Ansell, has ever been observed in the course of recoinage of United States gold.

Ansell relates that in the trial of the pyx in 1861, the gold coined at the mint in London that year was found to be four grains on the pound sterling too fine, that is to say, containing in 5,760 grains 5,284 grains of pure gold in the place of 5,280 grains, which it should have contained. Thus a loss of four grains of gold was incurred on each pound coined, amounting to £757.6587 in value on every million of sovereigns (Ansell, op. cit., p. 49).

When under passing commercial or financial conditions coin can be directly exported to advantage, without the medium of exchange, the same culling process is employed.

It is obviously the interest of exporters of gold coins at valuation by the consignee as bullion, less mint charges, to ship coins of full weight to the exclusion of worn coin.

Except in the case of obsolete coins, like the Spanish doubloon, a country is more likely to lose its fresh coins by export than worn coin. This seems to be a commercial proposition true of every commercial country.

Mr. Mason, of the assay office at New York, informs me that the English sovereigns deposited at that office for melting are generally comparatively new, or at least fresh full-weight coin.

The same is the case with the Spanish 25-peseta piece, German 20-mark and French 20-franc pieces of which the proportion deposited at

the assay office at New York has been of late much greater than of sovereigns.

Mr. Fremantle, from personal information imparted to him by the superintendents of the two institutions respectively, cites the interesting fact that at the mint at San Francisco 213,629 ounces of sovereigns, of the value of £831,818, were melted up during the two years from July 1, 1882, to June 30, 1884, while at the assay office at New York, in the eight years ended June 30, 1884, no less than £1,358,822 had been melted, or an average of £169,853 a year.*

Wherever gold coin is received by tale and paid out by weight, as in the larger foreign commercial transactions, it passes through a process of commercial selection. But unlike natural selection this does not result in a survival of the fittest. On the contrary, it is the worn coins which are preserved and which perform the duty of actual domestic circulation in some countries, or at least in England, to the almost complete exclusion of full-weight coins. Thus, as we see, it is fresh coin which, diverted from domestic circulation, is turned into the channels of foreign trade, and incontinently hastened to a sure and untimely end in the melting pot.

When, on the other hand, coins are received by weight and, on the part of money brokers and others, paid out to the unwary or unexact-ing by tale, the selection for the single transaction, if not in favor altogether of the lightest coin, is at least not in favor of full-weight coin. It may be assumed that moderately worn rather than uncurrently light coins are selected for this business when fairly conducted.

The following table, prepared at the United States assay office at New York, exhibits the average bullion value of foreign gold coins in which gold balances are the more frequently liquidated at the port of New York, and which therefore form the bulk of specie deposits at the United States assay office at that city. The values here cited are the mean average values of all deposits of this class at that branch of the Mint service for a term of some eight years, brought up to August 26:

Denomination.	Value.	Denomination.	Value.
Sovereign.....	\$4. 8493	Mexican 20 pesos	\$19. 6096
20 francs.....	3. 8491	10 guilders.....	4. 0157
20 marks.....	4. 7537	20 kronen	5. 3477
25 pesetas	4. 7967	Spanish doubloons.....	15. 57
10 escudos and 100 reals.....	4. 973	Mexican doubloons	15. 56
5 roubles.....	3. 9805	Argentine Republic 5 pesos.....	4. 8204

Considering alone the quantitative loss and accepting the coefficient of 0.02 per cent. for the annual abrasion of miscellaneous gold coin, and assuming the stock of gold coins in the civilized countries of the world from eleven to twelve milliards of marks, Soetbeer has calculated

* Fifteenth Annual Report of the Deputy Master of the Mint, 1884, 89. In my report for the present fiscal year further information, not yet complete, will be given on this interesting subject.

the annual loss of fine gold from the wear of coins, including accidental losses, to be 800 kilograms (\$531,679).

Experiments on a large scale in 1867 by Swiss banks, made with great pains to secure accuracy to ascertain the abrasion sustained by French gold coins, afforded the following annual coefficients expressed in parts of one million, namely, the—

	Per cent.
20-franc piece (Napoleon)	200 millionths = 0.02
10-franc piece	430 millionths = .043
5-franc gold piece	620 millionths = .062

The loss shown by Jevons in the English sovereign, expressed in similar terms, was 349 (by Martin 351 millionths parts), and in the half-sovereigns 1,120 millionths, or more than one-tenth (.112) per cent. per annum.*

These investigations show the wear of the 10 franc piece to be about two and one-fourth times as much as that of the 20-franc piece and of the 5-franc piece to be three times as great as that of the 20-franc piece.†

In the course of the Swiss investigation it was observed that the wear, as usual, was greater in the first year of circulation, diminishing in proportion to the reduction of the sensible inequalities of stamping.

Similar experiments on the same class of coin were made by French authorities at Strasburg and Paris about the same time, with results in both instances practically uniform with those made in Switzerland.

Three thousand 20-franc pieces (Napoleons) were divided equally among the years 1851–1860 at the Strasburg mint, giving an average annual wear of 209 millionths. The experiments in Paris, conducted by Dumas, and with the great accuracy which might be expected of so distinguished a physicist, were made with 10,000 Napoleon pieces as follows :

Period.	Per 1,000.
The First Empire (1809–1814)	5.8
Louis XVIII (1815–1824)	5.7
Charles X (1824–1830)	6.3
Louis Philippe (1830–1848)	4.9
1848–1852	3.0
1853–1857	2.6
1858–1862	1.7
1863–1867	0.6

These experiments also afforded the average annual coefficient of about one-fifth part per thousand, or some 0.02 per cent. This coefficient was also found to decrease in course of time, after a lapse of from fifty to sixty years diminishing to the extent of one-half.

The English sovereign is heavier than the Napoleon (7.988 grams against 6.452 grams) but with about the same surface (0.8680 inch diameter against 0.82677 diameter), and therefore under uniform physical conditions should suffer less less in proportion.

*Mr. Hendriks, expressing in similar terms the results of the investigation by the Bank of England, made some nineteen years ago, into the condition of the current sovereigns at that time, found three hundred and eight millionths parts to be their annual coefficient of wear, thus showing, in connection with the results of Jevons and Martin, a continual or progressive deterioration of the gold circulation of Great Britain. Journal Institute Bankers, Vol. 3, p. 350.

†Soetbeer: Verwendung des Goldes und Silbers, Jena, 1881, p. 5. Average yearly abrasion of 20-franc pieces of 1807–1847, from 119 to 160 millionths, and of pieces from 1845–1867, from 170 to 250 millionth parts.

According to Soetbeer 10,000 German *doppelkronen*, indiscriminately drawn from the ordinary channels of trade in 1881, weighed 79.5759 kilograms, against 79.6495, their weight standard. This weight, in connection with their calculated circulation, corresponded to an average abrasion represented by a coefficient of less than 0.014 per cent. per annum.

Soetbeer calls attention to the inevitable failure on the part of mints, to a greater or less extent, to keep within the degree of legal tolerance or "mint remedy," so called, by way of allowance for over weight or under weight from the legal standard of weight, and refers to the popular practice as common in most countries of selecting the over-weight coins for exportation or industrial consumption, to the exclusion of light weight or standard weight coins. Assuming that the original weight of new coin remaining in circulation subsequent to the extraction at the hands of the public of over-weight or standard pieces as .05 per cent. less than standard weight, the relative diminution of the estimated presumptive abrasion would be larger.

Soetbeer accordingly argues, on the assumption of an average yearly abrasion for the present time amounting to 0.02 per cent. in the gold circulation of civilized countries, that this coefficient is above rather than below the fact.

This coefficient, however, he adopted in his treatise, with the understanding that it affords sufficient margin to include the definitive loss of individual pieces, together with such deperdition as arises from vicissitudes by sea and land, the aggregate of which, as compared with the whole, is small, but which, for the sake of completeness, must be taken into consideration.*

Mr. John Biddulph Martin, in his paper on the gold coinage of Great Britain,† remarks that the coinage act of 1870 is altogether unjust and to a great extent a dead letter, its strict application, even were it practicable, being altogether impolitic. Under the act the sovereign of standard weight and fineness is issued at the value of 20 shillings, and is allowed to pass from hand to hand until it is intrinsically worth only 19s. 10½d. ; but the next holder, in whose pocket it suffers the least further abrasion, is mulcted not only in this amount but by the difference between the buying and selling price of gold at the Bank of England, namely, 1½ pence per ounce, making a total of a little less than 2 pence. Giving an illustration of the unfairness of this view, Mr. Martin supposes that A were to pay to the Bank of England 50,000 standard sovereigns along with 50,000 sovereigns that just failed to turn the scale, while B were to pay in 100,000 sovereigns each of which was just over the legal-tender limit of 122.5 grains, the result being that A's parcel would be worth at the mint-buying price £514 13s. 8d. more than B's, but he would be charged the loss of £504 5s. 6d., while B would lose nothing.

Mr. Martin urges that if, in spite of its inequalities, the application of the law were insisted upon and enforced the difficulties and discontent which would arise would soon make it intolerable. The practice of testing the weight of gold coin in many cases, according to this

*Soetbeer, *Verwendung*, p. 7.

†*Journal Institute Bankers*, vol. 3, 1882, p. 316.

writer, has fallen into disuse owing to the competition between banks, and the exceptional following of this practice by the Bank of England places the bank at a disadvantage by keeping away accounts, including Government accounts, which would otherwise come to it.

To carry out the requirements of the law would require a general agreement among competing banks on this point whereby one and all should charge their customers on light gold. These, it is imagined, would retaliate in self-defense. "The brewers, for instance, would decline to take light gold from the publicans, and the publicans again would refuse it from their patrons. Every retail dealer would do the same, and no cash transactions at a fair or market could be completed, no railway ticket taken without the use of a pair of scales. Endless wrangling would arise in all directions, and the loss would undoubtedly fall most heavily on the wage-earning class, who would hardly be in a position to refuse a light coin tendered in payment, and who would probably have to pay an excessive amount in order to get rid of it. If a sovereign taken in wages proved to have only a purchasing power of 9s. 8d., the loss of the price of a quart of beer would be no slight grievance."

This writer sees but one possible advantageous result from such a state of things, namely, that the discredit into which the gold coinage would fall might tend to bring silver into favor among the wage-earning class. On the other hand, it is considered that if all light gold were receivable by the Bank of England by tale, it might be objected that fraudulent tampering with gold coin would at once increase. But it is urged that if it were known that light coins were the exception and that effective provision existed for withdrawing them from circulation, coin excessively worn would be exceedingly unpopular, and flagrantly light coin of modern date cease to be current. Thus sweated and other mutilated coins might become less common than at present.

In 1884 a serious attempt was made by the chancellor of the exchequer to obtain legislation upon the condition of the gold coinage of Great Britain by the introduction of a coinage bill, which, however, was not proceeded with, according to Mr. Palgrave, owing to its connection with the franchise bill.

Mr. Palgrave, at the request of the council of the London Institute of Bankers, drew up a statement the same year showing the position of the question as to the condition of the gold coinage. A valuable paper was read by him in November of the same year and published in the *Journal of the Institute*.*

Taking Mr. Childers's estimate as a basis for the wear of the gold for 1884 with wear of coinage allowed for to 1885, Mr. Palgrave estimates the deficiency of 40,000,000 half-sovereigns at £220,000; wear of coinage on sovereigns, including the four years' wear from 1881 to 1885, £661,680; four years' wear in half-sovereigns from 1881 to 1885, £86,800. Total, £968,480. This is on the basis of wear shown by Mr. Jevons's estimates, which is little below that made by Mr. J. Biddulph Martin.

According to the former of these authorities the wear of a gold coinage of £80,000,000 in sovereigns was estimated at £27,900 a year, and of £20,000,000 in half-sovereigns, about £21,700 a year.

The estimates of the volume of the gold currency of Great Britain varied some years ago between £80,000,000 and £117,000,000. Since these estimates have been made there has been a large increment from the output of English and Australian mints, and as an unknown factor in any such estimates of volume there is a large amount corresponding to the English gold coin used as legal tender in Portugal and her de-

* Vol. 5, 1884, p. 548.

pendencies, and to great extent in Egypt, Brazil, and elsewhere, and which has passed out of the English circulation.*

Whatever be the net remainder after deducting these various unknown quantities, whether it be within the previous estimates or considerably in excess of them, Martin holds to be comparatively immaterial. The expenses of recoinage 100,000,000 of sovereigns was estimated by the mint authorities in 1868 at £559,950, including the comparatively small item for mint expenses. "When a recoinage is determined," says Mr. Martin, "a much larger expense should not stand in the way of the richest nation in the world, a nation which nearly two hundred years ago (1696) did not shrink from appropriating £2,700,000 to the restoration of its silver currency."

The coinage laws of Great Britain are silent upon the subject of the redemption of gold coin worn below the limit of legitimate abrasion. Recoinage of gold takes place in Great Britain only by special enactment of Parliament, and the redemption of worn coin only by proclamation.

The coinage act of Great Britain (4th April, 1870) continues the legal-tender quality of any of its given gold coin at nominal value until called in by proclamation made in pursuance of the same act, and when "it has not become diminished in weight by wear or otherwise so as to be of less weight than the current weight, that is to say, than the weight (if any) specified as the least current weight in the first schedule" of the same act, or less than such weight as may be declared by any proclamation made in pursuance of the same act.

STANDARD WEIGHT OF COIN OF UNITED KINGDOM OF GREAT BRITAIN, &C.,
MINT REMEDY AND LEAST CURRENT WEIGHT WHEN REDUCED BY ABRASION.
FROM COINAGE ACT, 1870.

Denomination of coin.	Standard weight.		Least current weight.	
	Imperial weight.	Metric weight.	Imperial weight.	Metric weight.
Gold :	<i>Grains.</i>	<i>Grams.</i>	<i>Grains.</i>	<i>Grams.</i>
Five-pound	616. 37239	39. 94028	612. 50000	39. 68935
Two-pound	246. 54895	15. 97611	245. 00000	15. 87574
Sovereign	123. 27447	7. 98805	122. 50000	7. 93787
Half-sovereign	61. 63723	3. 99402	61. 12500	3. 96083
Silver :				
Crown	436. 36363	28. 27590	.....	.....
Half-crown	218. 18181	14. 13795	.....	.....
Florin	174. 54545	11. 31036	.....	.....
Shilling	87. 27272	5. 65518	.....	.....
Sixpence	43. 63636	2. 82759	.....	.....
Groat or fourpence	29. 09090	1. 88506	.....	.....
Threepence	21. 81818	1. 41379	.....	.....
Twopence	14. 54545	0. 94253	.....	.....
Penny	7. 27272	0. 47126	.....	.....
Bronze :				
Penny	145. 83333	9. 44984	.....	.....
Halfpenny	87. 50000	5. 66990	.....	.....
Farthing	43. 75000	2. 83495	.....	.....

* Martin, Journal Institute Bankers, vol. 3, p. 318.

STANDARD WEIGHT OF COIN, OF UNITED KINGDOM OF GREAT BRITAIN, &C., MINT REMEDY AND LEAST CURRENT WEIGHT WHEN RDUCEED BY ABRASION, &C.—Continued.			
Standard fineness.	Remedy allowance (tolerance.)		
	Weight per piece.		Millesimal. fineness.
	Imperial grams.	Metric grams.	
Gold :	{ 1. 00000	0. 06479	} 0. 002
Eleven-twelfths fine gold, one-twelfth alloy; or mil-	{ 0. 40000	0. 02592	
lesimal fineness 916.66	{ 0. 20000	0. 01296	
	{ 0. 10000	0. 00648	
	{ 1. 81818	0. 11781	} 0. 004
	{ 0. 90909	0. 05890	
	{ 0. 72727	0. 04712	
Silver:	{ 0. 36363	0. 02356	
Thirty-seven fortieths fine silver, three-fortieths alloy;	{ 0. 18181	0. 01178	
or millesimal fineness 925	{ 0. 12121	0. 00785	
	{ 0. 09090	0. 00589	
	{ 0. 06060	0. 00392	
	{ 0. 03030	0. 00196	
Bronze:	{ 2. 91666	0. 18899	} None.
Mixed metal—copper, tin, and zinc	{ 1. 75000	0. 11339	
	{ 0. 87500	0. 05669	

“The weight and fineness of the coins specified in this schedule are according to what is provided by the act fifty-six in George the Third, chapter sixty-eight, that the gold coin of the United Kingdom of Great Britain and Ireland should hold such weight and fineness as were prescribed in the then existing mint indenture: that is to say, that there should be nine hundred and thirty-four sovereigns and one ten-shilling piece contained in twenty pounds weight troy of standard gold, of the fineness at the trial of the same of twenty-two carats fine gold, and two carats of alloy in the pound weight troy; and further, as regards silver coin, that there should be sixty-six shillings in every pound troy of standard silver of the fineness of eleven ounces two pennyweights of fine silver and eighteen pennyweights of alloy in every pound weight troy.”

We have seen that a large part of the volume of the gold coin of Great Britain falls outside the limit of current weight, and although uncurrent, not ceasing to freely circulate except in certain quarters, notably the Bank of England and perhaps some of the larger and more independent private banks.

While the circulation of uncurrent coin in England is at the risk of the holder, it is the last holder alone on whom the deficiency in value falls in case of being called in for redemption by proclamation. No recourse seems to be left open to the British public from the circulation of gold coin well known to be uncurrent, except through a provision of the coinage act of 1870. This provision, however, seems never to have been enforced or observed.*

*Ante foot-note, p. 93; also p. 710.

In the United States the provisions of law in regard to light gold coins are contained in section 3505 of the Revised Statutes of the United States, which is as follows:

“Any gold coins of the United States, if reduced in weight by natural abrasion not more than one-half of one per centum below the standard weight prescribed by law, after a circulation of twenty years, as shown by the date of coinage, and at a ratable proportion for any period less than twenty years, shall be received at their nominal value by the United States Treasury and its offices, under such regulations as the Secretary of the Treasury may prescribe for the protection of the Government against fraudulent abrasion or other practices.”

The following table exhibits the legal weight of United States gold coin and the least current weight after a circulation of twenty years:

STANDARD WEIGHT, LEGAL LIMIT OF ABRASION, AND LEAST CURRENT WEIGHT OF UNITED STATES GOLD COIN AFTER A CIRCULATION OF TWENTY YEARS.			
WEIGHT OF SINGLE PIECES.			
Denomination.	Standard weight.	$\frac{1}{2}$ per cent. abrasion.	Least current weight.
	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>
Double eagle	516	2.58	513.42
Eagle	258	1.29	256.71
Half eagle	129	0.64	128.36
Three dollars	77.4	0.38	77.02
Quarter eagle	64.5	0.32	64.18
Dollar	25.8	0.13	25.67

It must be borne in mind, however, that in adjusting the weights of the gold coins—that is to say, in weighing the blanks before striking—the law, under the provision of “tolerance” or “remedy,” allows a deviation from the legal weight of one-half grain in the case of the eagle and double eagle, and one-quarter grain in the case of the other gold coins. The abrasion allowed by law on a double eagle which has been in circulation twenty years is 2.58 grains. In case of individual coins, however, it may sometimes happen that they be struck and issued one-half grain light, in which case the actual wear necessary to render them uncurrent would not be in excess of 2.08 grains.

No systematic investigations on an adequate scale have been made in this country, so far as I am aware, to determine the loss by actual wear of United States gold coins.

There is afforded some information on this subject, however, from the results of the recoinage in 1873 of a large number of light gold coins which had accumulated in the Treasury of the United States. These results are given in the report of the Director of the Mint for the fiscal

year 1873 (page 67). This recoinage represented the accumulation of light gold coins since 1834, no considerable recoinage of gold in this country having been executed since that following the change of standard in 1834.

Sifting out for exportation coin of weight to the exclusion of light coin had been practised for many years as usual where gold coin is handled for commercial purposes by weight rather than by tale.

As stated by the Director in his report, "In very large exports of coin since the suspension of specie payment in 1861 unworn coin were selected for that purpose."

The light coin deposited for recoinage consisted of gold dollars, quarter and half eagles, and some few double eagles.

The loss by abrasion on the total sixteen millions of dollars of light gold coins, consisting principally of dollars, quarter eagles, and half eagles, with some few double eagles, on the occasion referred to, recoined at the mint at Philadelphia, amounted to 4,399.12 standard ounces, or \$81,844.09. The legal weight of the sixteen millions of dollars being 860,000 ounces, the loss by abrasion on the whole amounted to .00514, a little over one-half of 1 per cent. on an average circulation of about twenty-five years.

The loss by abrasion on the six million gold dollars included in the above amount was .00478, a little less than one-half of 1 per cent.

As the coinage of the gold dollar was not authorized until the act of March 3, 1849, and as specie payments were practically suspended in 1861, a period of twelve years may be said to cover the limit of circulation of these dollars. This would show a loss by abrasion of about 1 per cent. in a period of twenty-five years, or nearly double the legal allowance, and very largely in excess of the abrasion of other denominations of United States gold coin as far as observed. Thus the coefficient of abrasion for gold dollars in active circulation may be placed at one twenty-fifth of 1 per cent. per annum.

The loss by abrasion on two millions of dollars in quarter eagles was .00528, a little over $\frac{1}{2}$ per cent.; and on another lot of the value of two million nine hundred and sixty thousand dollars the loss was 0049164, an average loss on about five million dollars in quarter eagles of about $\frac{1}{2}$ per cent. It was thought that all these pieces were coined since the change in the coinage laws of 1834, so that a period of thirty years would represent the limit of their circulation. The coefficient of abrasion on quarter eagles may therefore be placed at one-sixtieth of 1 per cent. per annum.

The loss by abrasion on seven million of dollars in half eagles was .005214 per cent., a little over $\frac{1}{2}$ per cent. These had been in circulation probably about the same period of time as the quarter eagles, and the coefficient of abrasion may be said to be the same. The total recoinage of light gold

coin from July 1, 1872, to June 30, 1873, is exhibited in the following table:

RECOINAGE OF LIGHT-WEIGHT GOLD COINS, 1872-'73.

Value:

Tale.....	dollars..	32, 717, 189
Net.....	do ...	32, 523, 620

Weight:

Standard.....	ounces..	1, 758, 548. 93
Before melting	do ...	1, 748, 879. 85
After melting	do	1, 748, 379. 76

Loss:

By recoinage.....	dollars..	193, 568 98
By abrasion	ounces..	9, 669. 08
In melting	do	500. 09
By dirt	do	249. 00

The loss by abrasion was a little over one-half of one per cent., corresponding to a circulation of between 25 and 30 years, which was, as Dr. Linderman states, "much less than the rate given by the best writers as the average loss on coins from that cause."

In April, 1879, Dr. Frederick Eckfeldt, computer of bullion of the Bureau of the Mint, made a series of experiments to ascertain the average loss by abrasion suffered by United States gold coins.

This was done by taking five half eagles of different dates of coinage and six quarter eagles of different dates of coinage and computing from the actual loss in weight the annual average of abrasion.

It will be noticed from the results which are given below that the computations of Dr. Eckfeldt are based upon the loss below the maximum tolerance of deviation from standard of each piece allowed by law, which in the case of the half eagle and quarter eagle is, as previously stated, a quarter grain on each piece.

The result of this investigation showed that the eleven pieces of the face value of \$40, with an average circulation of 21.9 years, had lost in value \$1.47, or a little over $3\frac{1}{2}$ per cent. From these data was calculated an average loss of $6\frac{72}{1000}$ cents per annum on the entire \$40, or $\frac{158}{1000}$ of 1 per cent. for each dollar per annum.

This would amount to a loss by abrasion of 16 per cent. in a century, or 4 per cent. in a period of twenty-five years.

As the law only allows an abrasion for actual wear of one-half per cent. in twenty years, it will be seen that the result of this examination showed a loss many times larger than the wear provided for by law.

The results of this experiment are, however, of no particular value, as the number of coins taken was too few to afford any satisfactory result. It is only by taking a large number of coins which are known to have been in circulation for a considerable period of time that any definite and conclusive results as to the wear by circulation can be arrived at.

TABLE OF LOSS BY ABRASION OF GOLD COIN.

No.	Denomination.	Date.	Legal weight.	Actual weight.	Loss.
			Grains.	Grains.	Grains.
1	Half eagle (\$5)	1836	129.0	120.9	8.1
2	.....do	1851	129.0	126.0	3.0
3	.....do	1875	129.0	128.4	.6
4	.....do	1866	129.0	126.6	2.4
5	.....do	1872	129.0	128.0	1.0
6	Quarter eagle (\$2.50)	1854	64.5	60.0	4.5
7	.....do	1847	64.5	60.0	4.5
8	.....do	1856	64.5	61.2	3.3

COMPUTATION OF LOSS BELOW MAXIMUM TOLERANCE OF .25 GRAIN.

Number.	Grains.	Toler- ance.	Net.	Loss.
				<i>Cents.</i>
1.....	8.1	.25	7.85	30.626
2.....	3.0	.25	2.75	10.659
3.....	6.0	.25	.35	1.356
4.....	2.4	.25	2.15	8.333
5.....	1.0	.25	1.75	6.783
6.....	4.5	.25	4.25	16.473
7.....	4.5	.25	4.25	16.473
8.....	3.3	.25	3.05	11.821

COMPUTATION OF AVERAGE PERCENTAGE OF LOSS PER DOLLAR PER ANNUM.

Number.	Period.	Years.	Denomina- tion.	Loss.	Total loss.
				<i>Cents.</i>	<i>Cents.</i>
1.....	1836-1879	43	\$5.00	30.626	30.626
2.....	1851-1879	28	5.00	10.659	10.659
3.....	1875-1879	4	5.00	1.356	1.356
4.....	1866-1879	13	5.00	8.333	8.333
5.....	1872-1879	7	5.00	6.783	6.783
6.....	1854-1879	25	2.50 (two)	16.473 (two)	32.946
7.....	1847-1879	32	2.50 (two)	16.473 (two)	32.946
8.....	1856-1879	23	2.50 (two)	11.821 (two)	23.642
		8)175	40.00	.....	21.9)147.291
		21.9			40)6.720
					.168

Conclusion: Abrasion $\frac{100}{1000}$ of 1 per cent. (or dollar) per annum, an average of 5 \$5 pieces and 6 \$2.50 = \$40.

The annual wear of coin depends almost entirely upon the activity of their circulation. It is found to differ with their denominations or various sizes, and appears indeed to increase inversely to their size. The results of such experiments as have been made in this country tend to show the abrasion of United States gold coins under past conditions of circulation to be from $1\frac{1}{2}$ to 2 per cent. a century, or from \$150 to \$200 a year on a million dollars.

The grievances recently so plainly set forth by Jevons, Martin, Palgrave and others, on the part of the people of Great Britain, as to the degraded condition of their gold coinage, are without any counterpart in this country. The legislation of the United States has been not without the exercise of great liberality, especially in the definition of the legal-tender quality of its gold coins which it does not enforce beyond the limit of tolerance or "mint remedy," while it undertakes to redeem as of full legal tender quality, or at its nominal value, all gold coin within the statutory limit of abrasion—that is, one-half per cent. after twenty years' wear, or proportionally to the same rate for a less period. The Treasury Department, moreover, undertakes to redeem uncurrent gold coin received through the United States Treasury and its branches at its bullion value when worn by legitimate use below its least current weight, and to recoin the same.

The laws of the United States, as provided by the coinage act of 1873, are, in the above particulars, in direct contrast with the coinage laws of Great Britain. Section 3505 Revised Statutes directs that the United States Treasury and its officers shall receive at their nominal value all United States gold coins which are within the legal limit of abrasion, namely, one-half of one per centum below the standard weight prescribed by law after a circulation of twenty years as shown by the date of coinage, and at a ratable proportion for any period less than twenty years.

Section 14 of the same coinage act (3585 Revised Statutes) provides that the gold coins of the United States shall be a legal tender in all payments at their nominal value when not below the standard weight and limit of tolerance provided by the same act for the single piece,* and, when reduced in weight below such standard and tolerance, shall be a legal tender at valuation in proportion to their actual weight.

* SEC. 36. That in adjusting the weights of the gold coins, the following deviations shall not be exceeded in any single piece: In the double-eagle and the eagle, one-half of a grain; in the half-eagle, the three-dollar piece, the quarter-eagle, and the one-dollar piece, one-fourth of a grain. And in weighing a number of pieces together, when delivered by the coiner to the superintendent, and by the superintendent to the depositor, the deviation from the standard weight shall not exceed one-hundredth of an ounce in five thousand dollars in double eagles, eagles, half-eagles, or quarter-eagles, in one thousand three-dollar pieces, and in one thousand one-dollar pieces.

While sections 3505 and 3585 Revised Statutes * may at first sight appear to be contradictory, they are not so in point of fact. These two sections, as construed by this Bureau, provide that, to the general public, gold coins of the United States which are below the tolerance allowed on each piece, namely, one-half grain on the double eagle and eagle and one-quarter grain on the other gold coins, shall be a legal tender only in proportion to the actual weight of the coin.

Section 3505 directs that the United States Treasury shall redeem at their face value light gold coin within the limit of abrasion.

Both these sections of the Revised Statutes were originally contained in section 14 of the coinage act of 1873.†

The purpose evidently was that the general public shall not be obliged to receive light gold coins except for what they are actually worth as bullion; but that the Treasury shall be required to redeem them, or receive them, when not outside the limit of abrasion. The public is therefore only obliged to receive them at their nominal value when within the limit of tolerance, and when below the limit of tolerance at

* SEC. 3505. Any gold coins of the United States, if reduced in weight by natural abrasion not more than one-half of one per centum below the standard weight prescribed by law, after a circulation of twenty years, as shown by the date of coinage, and at a ratable proportion for any period less than twenty years, shall be received at their nominal value by the United States Treasury and its offices, under such regulations as the Secretary of the Treasury may prescribe for the protection of the government against fraudulent abrasion or other practices.

SEC. 3585. The gold coins of the United States shall be a legal tender in all payments at their nominal value when not below the standard weight and limit of tolerance provided by law for the single piece, and, when reduced in weight below such standard and tolerance, shall be a legal tender at valuation in proportion to their actual weight.

† SEC. 14. That the gold coins of the United States shall be a one-dollar piece, which, at the standard weight of twenty-five and eight-tenths grains, shall be the unit of value; a quarter-eagle, or two-and-a-half dollar piece; a three-dollar piece; a half-eagle, or five dollar piece; an eagle, or ten-dollar piece; and a double-eagle, or twenty-dollar piece. And the standard weight of the gold dollar shall be twenty-five and eight-tenths grains; of the quarter-eagle, or two-and-a-half dollar piece, sixty-four and a half grains; of the three-dollar piece, seventy-seven and four-tenths grains; of the half-eagle or five-dollar piece, one hundred and twenty-nine grains; of the eagle, or ten-dollar piece, two hundred and fifty-eight grains; of the double-eagle, or twenty-dollar piece, five hundred and sixteen grains; which coins shall be a legal tender in all payments at their nominal value when not below the standard weight and limit of tolerance provided in this act for the single piece, and, when reduced in weight, below said standard and tolerance, shall be a legal tender at valuation in proportion to their actual weight; and any gold coin of the United States, if reduced in weight by natural abrasion not more than one-half of one per centum below the standard weight prescribed by law, after a circulation of twenty years, as shown by its date of coinage, and at a ratable proportion for any period less than twenty years, shall be received at their nominal value by the United States Treasury and its officers, under such regulations as the Secretary of the Treasury may prescribe for the protection of the Government against fraudulent abrasion or other practices; and any gold coins in the Treasury of the United States reduced in weight below this limit of abrasion shall be recoined.

their actual bullion value, that is, by weight. The United States Treasury, on the other hand, is required to receive gold coin at nominal value within the limit of abrasion.

In this country, as in all other countries so far as I am aware, the loss produced by legitimate wear beyond the limit of abrasion, in the case of uncurrent gold coin, falls upon the last holder. Yet, under the circumstance that ready means are offered by the Government for redeeming uncurrent gold coin, the public has ample recourse against incurring individual loss by accepting as current coin that which has passed the prescribed limits either of tolerance or of abrasion.

Section 14 of the original coinage act of 1873 of the United States was framed with the intention of amply providing for any contingency which might have the effect of diminishing the weight of United States gold coin by wear or otherwise beyond the limit of tolerance. That the "limit of tolerance," as synonymous with "mint remedy," is meant, where the technical term is used and not the "limit of abrasion," follows from its definition as the limit of tolerance provided in the same act for the single piece, namely section 36. (Revised Statutes, 3535.)

The provisions of the coinage laws of the United States are as well designed as may be to protect the public against a degraded currency. The individual has only himself to blame if he receives at nominal value a gold coin which is strictly current only at a deficient value from standard weight. The fact that the public is not on the alert against receiving by count what by law is valued only by weight, cannot be considered to militate against the laws themselves.

The experiment has recently been tried at the instance of the Treasury Department of aiding the public in the discrimination between light gold coins and coins of standard weight, by stamping light gold coins with the letter L, so at least to admit of ready detection by Treasury officials and the public.

A precedent for the above measure is afforded by section 7 of the act to consolidate and amend the law relating to the coinage and Her Majesty's mint (4th April, 1870), as follows:

"Where any gold coin of the realm is below the current weight as provided by this act, or where any coin is called in by any proclamation, every person shall, by himself or others, cut, break, or deface any such coin tendered to him in payment, and the person tendering the same shall bear the loss."

That the law is still in force, however little observed, is shown by the following obliging communication on the subject:

ROYAL MINT, *August 26, 1886.*

DEAR SIR: In the absence of Mr. Fremantle, who is now out of town, I have the pleasure to reply to the inquiries contained in your letter of the 4th instant.

There is nothing in any act of Parliament now in force respecting the recoinage of gold, except what is contained in the coinage act of 1870 (33 Vic., cap. 10),* a copy of which is appended to Mr. Martin's paper, referred to in your letter. This act

* Bankers' Institute, vol. 3, p. 337.

while partially or wholly repealing several previous acts, is in itself a codification of various regulations contained in indentures, orders in council, &c., respecting the coinage and the mint. Section 7 has not been repealed or qualified.

I remain, dear sir, faithfully yours,

I. GOLDSMITH,
Chief Clerk.

Dr. JAMES P. KIMBALL.

If experiments be continued by the sub-treasuries and mints of the United States, it is to be expected that it will soon come to pass that light coins will cease to perform the functions of legal-tender coin, and that they will be presented for redemption before progressive wear entails further loss upon the last holder, on whom falls the cost of their wear and tear from the time of their issue. This is the penalty incurred by the last holder for his own neglect in accepting light or uncurrent coin.

Certain disingenuous practices, it is to be hoped, will be prevented, such, for instance, as the persistent offer of light coins till finally passed at their nominal value, and the common emission as a matter of profit by coin brokers of the same gold coin by tale that they have refused to receive except by weight.

Experience has demonstrated that silver coins lose more rapidly by wear than gold coins. This is probably due less to the physical difference between the two metals than to the greater use of silver for small change, and from the greater activity of its circulation as compared with that of gold.

As observed by English writers, in the case of the greater wear of the gold half-sovereign in contrast with the sovereign, the smaller coin circulates the more freely among the working classes, at whose hands it receives the harder usage.

In 1831 Jacob placed the wear of the English silver coins at one-half to 1 per cent. annually. But this seems now to be conceded to have been largely in excess of results obtained by later experiments.

Experiments were made at the London mint in 1826 to ascertain the loss on silver coins of different denominations. Three hundred coins of each denomination for each period were taken. The result, hereto appended, showed that half-crowns having a circulation of ten years lost about 1 per cent., shillings 2.3 per cent., and sixpence $3\frac{1}{2}$ per cent.

Age of coins.	Reduced weight.	Actual weight.	Loss by abrasion.	Percentage of loss.	Coefficient of annual abrasion.	Mean coefficient of the several denominations.	Mean coefficient for small silver coins.
	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>				
Half crowns :							
Ten years	65, 416	64, 766	650	0. 99	0. 099	.....	.....
Six years	65, 418	64, 917	501	0. 76	0. 126	.....	.....
Two years	65, 350	65, 304	46	0. 0703	0. 0351	.....	.....
Shillings :						. 0867	
Ten years	26, 166	25, 564	602	2. 30	0. 230	.....	.....
Six years	26, 167	25, 746	421	1. 60	0. 266	.....	.....
Two years	26, 159	26, 095	64	0. 24	0. 12	.....	.....
Sixpences :						. 205	
Ten years	13, 083	12, 590	493	3. 76	0. 376	.....	.....
Six years	13, 083	12, 771	312	2. 38	0. 396	.....	.....
Two years	13, 079	13, 032	47	0. 35	0. 175	.....	.....
						. 315	
							. 20225

Dr. Soetbeer gives the loss on French silver coins (same fineness as United States coins) as follows :

	Full weight.	Annual loss.	Per cent. of loss.
	<i>Grams.</i>	<i>Milligrams.</i>	<i>Per cent.</i>
Of five-franc pieces	25	7. 53	0. 030
Of two-franc pieces	10	9. 44	0. 094
Of one-franc piece	5	7. 93	0. 159

He also gives the abrasion of old German silver coins (fineness .750) as follows :

	Full weight.	Annual loss.	Per cent. of loss.
	<i>Grams.</i>	<i>Milligrams.</i>	<i>Per cent.</i>
Of thaler pieces	22. 2720	6. 10	0. 027
Of one-sixth thaler pieces	5. 3453	4. 18	0. 087

The same writer states the loss by light weight on the 698,000,000 marks of German silver coins called in and melted into bars to have been 25,000,000 marks, or 3.58 per cent., the coins having long been in circulation.

Dr. Soetbeer, in his "Materialen," No. 9, page 34, concludes that the total loss by abrasion of silver coin at present in circulation in the world is not as great as it has been assumed to be.

"If," says Soetbeer, "we assume it, inclusive of all accidental losses, to be about 50,000 kilograms annually, we shall be estimating it too high rather than too low, and this is not 2 per cent. of the present annual production of silver."

The results of an examination of a large number of subsidiary silver coins of the United States taken from the different sub-treasuries were published by the Treasurer of the United States in 1885. (Finance Report 1885, 498, 499.)

From an examination of 200 half-dollars the average loss per piece on 683 pieces tested, bearing dates between 1806 and 1836, was 5.29 grains per piece, or about $2\frac{1}{2}$ per cent. of loss.

On 3,849 pieces struck between 1837 and 1852 the average loss per piece was 4.46 grains, or about 2.16 per cent.

On 91,635 pieces, bearing dates from 1853 to 1873, the average loss per piece was 4.38 grains, or about 2.28 per cent.

On 106,775 pieces, bearing dates from 1874 to 1878, the average loss per piece was 2.65 grains, or about 1.37 per cent.

On 300 quarter-dollars examined, the loss on 91 pieces tested, coined between 1831 and 1836, was an average of 4.26 grains, or about 4 per cent.

On 2,104 pieces tested, bearing dates from 1837 to 1852, the average loss per piece was about 4 grains, or nearly 4 per cent.

On 118,812 pieces tested, bearing dates from 1853 to 1873, the average loss per piece was 3.21 grains, or about 3.35 per cent.

On 178,860 pieces, bearing dates from 1874 to 1878, the average loss per piece was 1.86 grains, or about 1.92 per cent.

Taking the period from 1874 to 1878 as a basis of estimation, during which period the largest number of pieces were tested, the average loss on the half-dollars was, as stated, 1.37 per cent., and on the quarter-dollars 1.92 per cent.

Estimating that these coins had an average circulation of twelve years, the loss on the half-dollars would be 11 per cent. a century, and on the quarter-dollars about 15 per cent., corresponding for the annual wear to the coefficient of one-ninth of 1 per cent. for halves, and one-seventh of 1 per cent. for quarters.

It will probably be safe to say in general that the loss on small silver coins in active circulation will average from 10 to 20 per cent. in a century, or from one-tenth to one-fifth of 1 per cent. a year.

The following table exhibits the legal weight, tolerance, abrasion, and coefficient of actual loss on United States coins :

LEGAL WEIGHT, LIMITS OF TOLERANCE AND ABRASION, LEAST CURRENT WEIGHT, &C., OF UNITED STATES GOLD AND SILVER COINS.							
Denomination of coins.	Standard or legal weight.	Tolerance allowed by law on individual pieces.	Minimum legal weight of new coins (less tolerance).	$\frac{1}{2}$ per cent. abrasion for 20 years' wear.	Least current weight after 20 years' wear (standard weight less legal limit of abrasion).	Annual abrasion with- in legal limit.	Actual coefficient of annual abra- sion from experiments.
GOLD.							
Double eagle.....	Grains. 516.0	Grains. .50	Grains. 515.50	Grains. 2.58	Grains. 513.42	Grains. .129	Grains. .0860
Eagle	258.0	.50	257.50	1.29	256.71	.0645	.0430
Half eagle.....	129.0	.25	128.75	.645	128.355	.0322	.0215
Three-dollar.....	77.4	.25	77.15	.387	77.013	.0193	.0129
Quarter eagle	64.5	.25	64.25	.322	64.178	.0161	.0107
Dollar.....	25.8	.25	25.55	.129	*25.671	.00645	.0103
SILVER.							
Dollar.....	412.5	1.5	411.0	.....	.....	.....	.....
Half dollar	192.9	1.5	191.40	.....	.....	.....	.214
Quarter dollar.....	96.45	1.5	94.95	.....	.....	.....	.137
Dime.....	38.58	1.5	37.08	.....	.....	.....	†.077
* The limit of tolerance of the gold dollar being $\frac{1}{4}$ of a grain (nearly double the limit of abrasion), the gold dollar will continue current until reduced in weight below 25.55 grains.							
† Estimated at $\frac{1}{2}$ of 1 per cent a year.							

By act of Congress approved May 26, 1882, gold bars may be exchanged for an equivalent value of gold coins in sums of not less than \$5,000. Availing himself of this provision, a shipper of gold is relieved of any loss within the legal limit of natural abrasion on gold coins deposited for bars.

Light weight United States gold coin may be deposited at the United States mints and assay offices, and the bullion value received in return without being subjected to mint charges of any kind.

The recoinage of light gold and silver coins takes place whenever, at the instance of the Treasury Department, appropriations are made for the purpose. The following statement gives in terms of fiscal years the several amounts appropriated since 1873 for recoinages of mainly light gold coins in the Treasury and the amount actually expended for this specific purpose.

APPROPRIATIONS AND EXPENDITURES FOR RECOINAGES OF LIGHT GOLD AND
SILVER COINS IN THE TREASURY.

Fiscal years.	Amount appropriated.	Amount expended.	Fiscal years.	Amount appropriated.	Amount expended.
1873.....	\$157, 500 00	\$155, 810 12	1881.....	.....	.....
1874.....	60, 000 00	47, 965 53	1882.....	.....	.....
1875.....	20, 000 00	12, 474 84	1883.....	{ \$25, 000 00	\$25, 000 00
1876.....	2, 000 00	288 19		{ 10, 000 00	9, 950 04
1877.....	90 94	90 94	1884.....	.....	.....
1878.....	1, 000 00	29 50	1885.....	15, 000 00	13, 222 86
1879.....	5, 000 00	895 44	1886.....	10, 000 00	9, 913 37
1880.....	5, 499 49	5, 412 66	1887.....	10, 000 00	7, 500 00

* Uncurrent silver coin. *

In comparison with the small number of recoinages of light gold coin which have taken place in Great Britain, the recoinages on the part of the United States, especially of light gold coins, have been very frequent. These have tended to preserve the integrity of the gold coins of this country as above explained. A similar tendency follows from the economy of the circulation of metallic money in this country, except in the states of the Pacific coast, through its replacement by representative and other kinds of paper money and negotiable instruments of credit.

The practice of Great Britain in the redemption and recoinage of worn gold coins is the reverse of that of the United States. While no regular provision is made either by law or by frequent enactments of Parliament for the restoration of the worn gold coins of the United Kingdom, worn silver coins are redeemed at their nominal value under annual appropriations by Parliament. In this country, on the other hand, the recoinage of worn gold coins takes place at the instance of the Treasury under appropriations by Congress made to cover any deficiency in weight and losses from remelting and recoinage. Such appropriations are based upon estimates by the Treasury with reference to its own continually accumulating stock of light-weight coins. In the case of silver coins the practice on the part of the United States and the United Kingdom is practically uniform.

Light-weight silver coins are redeemed at their nominal value by the United States Treasury, and after a sufficient accumulation, are re-coined under frequent appropriations by Congress providing for the recoinage of uncurrent gold and silver coins in the Treasury. In all cases special appropriations of this kind are used solely by way of reimbursing the Treasury for the loss incurred through deficiency in the weight of the coins. Recoinage of light weight and mutilated gold and silver coins is continually executed to the extent that worn and muti-

lated coins of both metals are deposited for recoinage by private individuals at the bullion value of the same free of mint charges. The operations of the mint service in the matter of recoinage of worn gold and silver coins will be indicated by the following table:

GOLD AND SILVER COINS RECEIVED AT THE MINTS AND ASSAY OFFICES OF THE UNITED STATES FOR RECOINAGE FROM 1873 TO 1886, INCLUSIVE.

Fiscal years.	Gold.	Silver.	Fiscal years.	Gold.	Silver.
1873.....	\$27, 116, 948 27	\$47, 779 75	1880.....	\$209, 328 82	\$39, 292 28
1874.....	6, 275, 367 29	58, 552 49	1881.....	440, 776 97	7, 307 40
1875.....	1, 714, 311 50	14, 201 46	1882.....	599, 356 80	127, 572 40
1876.....	417, 947 15	4, 851 64	1883.....	374, 129 23	636, 983 06
1877.....	447, 339 68	1, 028, 363 07	1884.....	263, 117 17	152, 031 20
1878.....	301, 021 79	6, 372 99	1885.....	325, 210 97	877, 564 58
1879.....	198, 083 17	10, 607 79	1886.....	393, 545 28	279, 292 39

An instructive communication from the Deputy Master of the Royal Mint is as follows :

ROYAL MINT, *London, January 7, 1886.*

SIR: In reply to your letter of the 16th ultimo, I have the honor to inform you that in this country the expense of withdrawing worn silver coin from circulation is borne by the State.

All worn silver coin returned to this department is purchased at its full nominal value, and the loss, that is, the difference between its nominal value and its value at $\frac{5}{8}$ per ounce (the rate at which silver coin is issued from the mint) is provided for by a sum annually voted by Parliament for "loss on worn silver coin withdrawn from circulation."

Silver coin is considered to be sufficiently worn to justify its withdrawal from circulation when the impressions are indistinct, and the coin is carefully "garbled" or sorted by the banks collecting it before it is sent back for recoinage.

Worn silver coin is collected by certain authorized agents: In England by the Bank of England; in Scotland by the Scotch banks; in Ireland by the Bank of Ireland, and in the colonies by the different colonial governments, or by banks appointed by them for that purpose.

I append herewith a table showing the profit derived by the State on the issue of silver coin, and the loss on its withdrawal for the ten years ended the 31st December, 1884, which will show you that in most years the silver coinage is a source of profit to the State.

I am, sir, your obedient servant,

C. W. FREMANTLE,
Deputy Master of the Mint.

JAMES P. KIMBALL, Esq.,
Director of the Mint, Washington.

Year.	Seignior- age on silver coin.	Loss on worn silver coin.
1875.....	£20,307	£19,730
1876.....	52,286	32,999
1877.....	31,439	25,776
1878.....	22,269	47,108
1879.....	32,209	54,702
1880.....	54,099	58,696
1881.....	118,002	46,065
1882.....	79,258	11,991
1883.....	165,192	49,473
1884.....	118,103	25,744
Total	693,164	372,284

Net profit to the State £320,880, or £32,000 per annum.

PART II.

PRODUCTION OF STATES AND TERRITORIES.

CHAPTER I.

ARIZONA.

By JOHN A. CHURCH.

The collection of statistics of bullion production in Arizona is surrounded with extreme difficulty. Much of the placer gold is taken to market by private conveyance. Much of the silver is shipped for reduction to works outside of the territory, and the true quantities cannot be always ascertained. Ore or bullion from California, Mexico, and New Mexico has been received in the territory and reshipped to states where it cannot be traced with precision. From these causes the following estimate of the territory's production cannot be submitted as anything more than an estimate, in which each item has been ascertained with all the accuracy possible. In fact, it is near the truth, though not perfectly accurate.

GOLD.		
Description.	Fine ounces.	Coining value.
Bars and dust	38,046.73	786,426 00
Base bullion	1,935.17	40,000 00
Ores and concentrates	2,902.75	60,000 00
Total	42,884.65	886,426 00
SILVER.		
Bars	1,594,780.37	\$2,061,891 56
Base bullion	320,000.00	413,728 00
Concentrates	643,500.00	831,981 13
Ore	400,000.00	517,160 00
Total	2,958,280.37	3,824,760 71
SUMMARY.		
Gold	42,884.65	886,426 00
Silver	2,958,280.37	3,824,760 71
Aggregate	3,001,165.02	4,711,186 71

The bullion product of Arizona suffered a serious loss in the year 1885 from the difficulties encountered in draining some of the principal mines in Tombstone. These difficulties, mostly confined to the details of establishing and working large pumps, have caused several delays, so that in some mines nothing has been accomplished except sinking to somewhat greater depth. The extraction of ore could not be undertaken, as the levels to be opened at the new depths were unfinished. During the period of combating the water, one of the companies, the Grand Central, developed a series of mines adjoining its title property and mined large quantities of ore, though of lower grade than the Central vein yielded. The Contention mill treated tailings chiefly, and the Tombstone Mill and Mining Company found new ore bodies above the water-level. During the year the latter company bought the Girard mill and mine at Tombstone and transferred its milling work from Charleston. The Boston Mining and Reduction Company concentrated its tailings by contract and worked the Knoxville mine. The ore from this property is an argentiferous manganese and is used by the Tombstone Mill and Mining Company for flux in its furnaces. On the whole, mining has been pressed with energy at Tombstone, and the bullion product has been about \$1,500,000, including base bullion, besides shipments of ore and concentrates.

In the Vetol district the mine of the same name produced \$211,793.67 as the result of its ore shipments and of the mill-run during the second half of the year, the mill having been completed in July.

The mines at Quijotoa also were equipped with a mill during the year, but it was not completed until late in the season, and had only three months' run. The operations in the district are exceedingly interesting as an example of what may be accomplished under the most unfavorable natural conditions. The district is in the heart of one of the most deserted portions of Arizona, but water has been obtained by boring more than 600 feet deep. The 20-stamp mill belonging to the Harshaw Mining Company was bought and is operating in a region that in its natural state did not always afford water enough to permit a prospector to make a camp.

Another new camp in the southern portion of the territory is at Nogales, on the Mexican frontier, the seat of the custom-house, on the line of the Sonora Railway. Discoveries of ore, mostly of the smelting kind, were made here, and shipments were frequent during the latter part of the year. A furnace is now building and the ores of this quarter will be worked at home. This may become an important smelting centre, as there is a valuable mining region south of it, in Mexico, capable of supplying large quantities of ore, but not developed extensively now. The smelting works at Benson, on the line of the same railroad, at its junction with the Southern Pacific Railroad, closed down during the year, an action that is believed to be due to a lack of lead ores. There are valuable lead mines in the southern part of the terri-

tory, but they are off the line of the railroads, in situations where they are not likely to be available until better means of transportation are provided.

In the northern portion of the territory the new enterprises in Mojave County are the most important. Kingman, on the Atlantic and Pacific Railroad, has become a shipping point for the ores from a number of mines in the neighborhood, the business increasing until at the end of the year it had assumed important proportions. In the same county, near the town of Signal, the mine of the same name has reopened its vein in a new place, and made discoveries of such importance that the owners have rebuilt the mill which was burned down a few years ago and will resume work during the year 1886. This mine is on the same vein as the McCracken mine, which has a fine mill of 20 stamps. The new discoveries are below the old workings of the McCracken, and may lead eventually to efforts to reopen that property.

A mill was built in Lost Basin to treat gold ores, but did not get to work until after the year closed.

Another shipping point in the northern part of the territory is Prescott, in Yavapai County. A great number of small districts send their bullion to this place. Most of them contain gold placers, the yield of which is dependent upon the rainfall.

A gold mill was built on the old Sterling mine near Prescott, and a large hydraulic plant was built on the Hassayampa River, at Walnut Grove. Both were finished too late in the season to accomplish much during the year. The last winter has been a snowy one and operations of this kind are expected to do well during the present year.

The Blue Dick mine was reopened by Governor Tritte, and shipments of silver ore made. The tailings of the Peck and Warrior mills were both reworked and the mines reopened. A concentrating mill on Big Bug Creek was built and ran successfully for six weeks, when water failed. It was started again in the spring of this year.

Humbug district, in Maricopa County, has been developed by prospectors and miners who have made considerable shipments of silver ore, though working without capital and supported on credit until their returns are received. The old Tip Top mill has been bought, it is said, for the purpose of concentrating the waste-dump of that mine. It will be moved from Gillette to the mine.

The Vulture mine in the same county has been worked with some interruptions, due to litigation among the owners. This dispute has terminated and the mine is run with regularity. It is the largest producer of gold in Arizona.

CHAPTER II.

CALIFORNIA.

BY ISRAEL LAWTON,

Superintendent United States Mint, San Francisco, Cal.

From information kindly furnished by owners, superintendents, and secretaries of mines, and from reliable reports made by them, as well as from carefully prepared estimates of the production of mines known to be operating, but from which no reports were received, and from a careful review of all of the data in my possession bearing upon the subject, I have estimated the production of the precious metals in California for the calendar year 1885 to have been \$15,229,080.62; gold, \$12,661,044.71, and silver, \$2,568,035.91. This estimate shows a production of nearly \$1,400,000 less than the estimate of 1884.

While this decreased production tends to convey the impression that the mining resources of California are gradually being exhausted, such is not the fact. The decision that prevents hydraulic mines from being operated by the hydraulic process has, of course, been accountable in a great measure for the present decrease in production; for, in almost every instance, these mines had just reached that point of development where it was anticipated the yield would have been far greater than ever known. These properties, with all their wealth in sight, are now idle, or nearly so. It is true that they are worked to a certain extent by the drifting process, yet the peculiar condition of some will not admit of this kind of mining. At least ten times the amount taken out by drifting would have been only a fair production by the hydraulic process during the same length of time.

Then, again, the closing of these mines has thrown thousands of miners out of employment. These men are prospecting and are constantly making discoveries in quartz, some of which have proven to be very valuable. These capital is beginning to seek out with a view to their development.

Much more attention is now being given to the quartz resources of the state. This is particularly noticeable in Shasta and Trinity counties, where new discoveries of gold and silver bearing quartz have been made that promise a prosperous future for these localities. With the aid of capital and improved machinery they are now in the course of rapid development.

Already many of these discoveries are returning good results, but, being still in their infancy, are not yet classed as producing properties.

Owing to a lack of water, the past year has been a very short one for the placer mines, whose usual production takes a prominent place in making up the gross production of the state. In consequence of insufficient water the production of this kind of mining has been very materially reduced, as the returns from the counties in which it is carried on very distinctly show.

“River bed” mining on a grand scale, by diverting the river from its bed and then working the former channel, is an experiment that is being tried in Butte County. A tunnel is nearly cut through that will, when finished, drain about 13 miles of the Feather river. The exposed river bed will then be worked. The present year will show the result of the experiment.

Silver mining in this state is constantly growing in importance, as the steadily increased production shows. The principal silver mines are located in Fresno, Inyo, and San Bernardino counties.

From information derived from reliable sources they are all in a healthy and prosperous condition, as far as development is concerned. Many of them, however, were not worked to their usual capacity during the year, and others were entirely idle, owing to the low price of silver. A great many new discoveries have recently been made in San Bernardino county, the largest county of the state, which are reported to equal if not exceed in richness any former discoveries. These are located remote from settlements and lines of travel, so that little positive information has yet been received concerning them. Enough is known, however, to recognize the importance of this great industry.

The decline in production for 1885 comes from a very few of the counties, while most of them produced about their regular output, some exceeded even the amounts expected from them.

This decline can be attributed to several reasons. Notably the most marked decline is in the production of Mono county. This county was credited with a production of \$1,285,000 in 1884, while in 1885 it does not exceed \$575,000, showing a diminished production of about \$710,000. This decline is entirely due to the large mines in Bodie district having encountered such extremely low-grade ore as to prevent working the mines or mills to their greatest capacity. Owners preferred to prospect their mines for bodies of pay ore in a careful and economical manner, and for this reason the output was so greatly diminished.

Nevada county follows with a diminished production of about \$370,000, caused by the injunction that closed all of the hydraulic mines in this county. In this county are located the greatest hydraulic mines in the state. Vast amounts of money have been expended in perfecting all details necessary to successfully operate these properties which were just beginning to become large producers when they were compelled

to abandon their method of working. Some of these mines were yielding from \$50,000 to \$300,000 each per annum.

El Dorado county produced far less than has formerly been credited to it. Many mines were closed during the year; others were being explored but not producing, but awaiting the attention of capital and machinery to again make them productive.

Owing to the extreme low price of lead, the production in Inyo county has declined very perceptibly. The ores of the mines, in this county, carry a very large percentage of lead. Taking into consideration the decline in price of both silver and lead, mine owners did not feel warranted in smelting their ores. Many smelters ran only for a short time, and the product, therefore, is considerably reduced.

The principal mines in Alpine county were idle during the year, and no production was reported. These mines are now owned by English capitalists, who intend to resume work upon them shortly.

Considering the small area of the mining portion of Amador county, it contains the largest number of productive mines in the state. Year after year the mines yield a steadily increasing supply to the world's wealth. The largest mines have attained a very great depth, and have been well explored and developed.

Butte county comes forward with about the same output that has been credited to its mines for years past. The most productive mines in the county are worked by the hydraulic process. By fortunate natural conditions, they are so situated that they can control their tailings and débris by empounding them, thus overcoming the great objection that is urged against other mines of this character that have not the same fortunate positions. Drift mining is also extensively engaged in, and the production from the drift mines is of large amount. Quartz mining is beginning to make its appearance, but as yet no well-developed mines of this class are in operation.

River-bed mining will be carried on extensively at Big Bend, during 1886, a large output from which is expected.

Colusa county is not a mining county. About the only mining done in the county is at Sulphur creek, where several mines are located that have produced small amounts for some years. All of these mines were consolidated and incorporated during the year, the most improved machinery purchased, and a fair production is the result.

Calaveras county is constantly developing the mining resources contained within its borders. The older mines continue to yield their usual production and new ones have made satisfactory returns. Large quantities of very low-grade ore are worked successfully in the county. Old abandoned mines with the assistance of new machinery are again producing. This county, altogether, presents a very prosperous condition. The production for 1885 was considerably in excess of that of other years.

Del Norte county's mining industries consist most prominently of placers. Owing to the short winter, the water supply was so very scant that many claims were prevented from working at all, and those that were worked yielded very small returns.

A large number of mines, that formerly were producers, have been exhausted in El Dorado county, yet quartz mining there is showing well. It seems only to lack the confidence of capital to again place it on a solid foundation and make it a great producer. The mines that were worked during the year return extremely satisfactory results. Many discoveries remain to be developed, which it is believed will be equally satisfactory when proper attention is given them.

The mining resources of Fresno county are being gradually developed. The production for the year shows an increase not altogether unexpected. Several discoveries that have been prospected and their richness determined have passed into the hands of capitalists, who are now expending large sums of money in erecting the necessary machinery to thoroughly develop their properties.

Humboldt county, like Del Norte, is a placer-mining county, and was affected in the same manner.

Not much work was done in Kern county during 1885 in the way of producing. The ledges were explored and extensive developments are expected to follow.

Mariposa county, in early years, was a great placer-mining centre, and even now mines of this character are being worked with varying success. Attention is being given to quartz, and developments are steadily being made. Encouraging reports are constantly being received bearing upon the future of this new industry in this county.

Mono county met with severe drawbacks, from the fact that the largest producing mines ran into low-grade ore, which largely reduced the production. These mines are all in good working condition, and hopes are entertained that they will soon return to their old standard of production.

Napa county contains some very promising silver locations. Machinery necessary to thoroughly develop them is now on the ground. Such confidence is felt in their value that the owners have purchased, at large expense, all the proper and improved machinery necessary to work them for years to come. Very little ore was extracted during the year, but that little gave excellent results.

Notwithstanding the serious falling off in Nevada county's production, by reason of its non-productive hydraulic mines, the output from the quartz mines, located in the county, was not diminished but rather greater than that of other years, thus making up in a measure the loss sustained. It is now expected that this class of mining will be developed to a far greater extent. It is contemplated to run a deep drain tunnel on a well-established lode for a distance of four miles, thereby

giving an opportunity to work some eighty locations where now only fourteen are producing properties.

The mining industry of Placer county was seriously affected by the stoppage of hydraulic mining, still the output from its extremely rich cement drift-gravel mines, has swelled the production of the county to its usual standard. During the year several rich strikes have been made in some of the old mines.

Plumas county mines produce about the same amount from year to year, and there seems no likelihood of this amount of production becoming much less for years to come. Some very large and well-developed quartz mines are located in this county, which are steady producers. No new locations were reported during the year.

The silver mines of San Bernardino county produced fully as much, if not more, bullion during the year than the amount estimated in 1884, yet the value of the production is much less.

Shasta county seems destined to regain the reputation that it once held for being one of the richest mining counties in the state. Frequent discoveries are being made, and those that have been developed have met the anticipations of their owners. Silver ore is being extracted and treated to some extent at Copper City. As will be noticed, the production for 1885 is far in excess of that of 1884, and more than double the amount produced in 1883. This is due to the enterprise and energy that have developed some of the later quartz discoveries.

Sierra county has produced more bullion than former estimates have given it credit for. The production of Sierra county for the year is much smaller than usual, but the figures make it appear much larger. Credit too frequently has been given to other adjoining counties for the output that was actually produced in this county. Very rich mines are in constant operation, a large yield from which can be safely depended upon. New ones, only partially developed, already rival the older ones in amount of production. A contest between the old and the new seems to be taking place, with the honors yet undecided. Good feeling exists in every mining locality in the county.

Siskiyou county, as has been often remarked, is a steady producer; still this year shows something of a decline in its production. Hydraulic and placer mining are the classes mostly followed in the county. The peculiar conditions of the county separate the two conflicting industries, and hydraulic mining is carried on unmolested by the *débris* question. The inadequate water supply compelled these mines to close down with but a short run. This was the cause of the small production as given.

Trinity county is developing valuable quartz properties. The New River mines which are being developed are yielding handsomely, and new discoveries are being made in that locality which promise well. The hydraulic and placer mines produced very poorly for the year, the lack of water being the cause.

Tuolumne county shows a slightly increased output, and while a large production was not anticipated, greater activity was manifested in the various mining camps than has been known for years before. Nothing particularly new was reported from this county, but the mining interests seem to have lost none of their former favor.

Yuba county has been too often credited with a greater production than properly belonged to it. Several producing mines in Sierra county are situated near the line of Yuba, and their bullion is mostly shipped through that county; hence the error occurs quite naturally. This county also has been severely injured by the débris question. While the estimated production is not materially less than in 1884, most of it was from clean-ups of the bed-rock in old hydraulic mines.

REPORTED BULLION PRODUCTION OF MINES OF CALIFORNIA, BY COUNTIES,
FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

County.	Gold.	Silver.	Total.
Amador	\$1, 835, 591 23	\$406 40	\$1, 835, 997 63
Butte	422, 568 50	.....	422, 568 50
Calaveras	397, 538 23	2, 558 20	400, 096 43
Colusa	40, 000 00	5, 000 00	45, 000 00
Del Norte	24, 390 00	9 18	24, 399 18
El Dorado	383, 353 85	.....	383, 353 85
Fresno	67, 500 00	2, 456 00	69, 956 00
Humboldt	20, 130 37	.....	20, 130 37
Inyo	7, 498 04	59, 961 49	67, 459 53
Kern	22, 003 00	.....	22, 003 00
Lassen	7, 500 00	150 00	7, 650 00
Los Angeles .....	.....	445 00	445 00
Mariposa	87, 177 00	100 00	87, 277 00
Mono	477, 860 41	88, 349 49	566, 209 90
Napa .....	.....	5, 000 00	5, 000 00
Nevada	1, 138, 873 68	4, 835 43	1, 143, 709 11
Placer	507, 801 51	411 43	508, 212 94
Plumas	688, 307 71	.....	688, 307 71
Sacramento	253, 522 00	.....	253, 522 00
San Bernardino	3, 000 00	2, 283, 436 37	2, 286, 436 37
San Diego	71, 125 00	.....	71, 125 00
Shasta	236, 004 75	9, 123 38	245, 128 13
Sierra	1, 060, 380 97	10 54	1, 060, 391 51
Siskiyou	119, 658 70	.....	119, 658 70
Stanislaus	18, 660 00	.....	18, 660 00
Trinity	175, 347 69	10 00	175, 357 69
Tuolumne	149, 503 34	1, 273 00	150, 776 34
Yuba	132, 448 73	.....	132, 448 73
	8, 347, 744 71	2, 463, 535 91	10, 811, 280 62

UNREPORTED BULLION PRODUCTION OF MINES OF CALIFORNIA, BY COUNTIES,
FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

County.	Gold.	Silver.	Total.
Amador	\$310, 000	.....	\$310, 000
Butte	250, 000	\$3, 700	253, 700
Calaveras	130, 000	.....	130, 000
Del Norte	15, 000	.....	15, 000
El Dorado	35, 000	.....	35, 000
Fresno	7, 000	.....	7, 000
Humboldt	9, 600	.....	9, 600
Inyo	17, 500	13, 500	31, 000
Kern	50, 000	.....	50, 000
Lassen	7, 500	.....	7, 500
Los Angeles	22, 500	1, 500	24, 000
Mariposa	62, 000	.....	62, 000
Merced	10, 000	.....	10, 000
Modoc	60, 000	.....	60, 000
Mono	5, 000	3, 500	8, 500
Nevada	1, 439, 000	.....	1, 439, 000
Placer	398, 500	.....	398, 500
Plumas	152, 000	.....	152, 000
Sacramento	100, 000	.....	100, 000
San Bernardino	20, 000	80, 000	100, 000
San Diego	20, 000	2, 000	22, 000
San Joaquin	2, 500	.....	2, 500
Shasta	181, 000	100	181, 100
Sierra	373, 500	.....	373, 500
Siskiyou	219, 000	.....	219, 000
Trinity	162, 800	.....	162, 800
Tulare	7, 500	.....	7, 500
Tuolumne	171, 400	200	171, 600
Yuba	75, 000	.....	75, 000
Total	4, 313, 300	104, 500	4, 417, 800

BULLION PRODUCTION OF MINES OF CALIFORNIA FOR THE TWELVE MONTHS
ENDING JANUARY 1, 1886 (COMBINED REPORTED AND UNREPORTED PRO-
DUCTION).

County.	Gold.		Silver.		Total.
	Reported.	Unreported.	Reported.	Unreported.	
Amador	\$1, 835, 591 23	\$310, 000 00	\$406 40	.....	\$2, 145, 997 63
Butte.....	422, 568 50	250, 000 00	.....	\$3, 700 00	676, 268 50
Calaveras.....	397, 538 23	130, 000 00	2, 558 20	.....	530, 096 43
Colusa.....	40, 000 00	.....	5, 000 00	.....	45, 000 00
Del Norte.....	24, 390 00	15, 000 00	9 18	.....	39, 399 18
El Dorado	383, 353 85	35, 000 00	.....	.....	418, 353 85
Fresno	67, 500 00	7, 000 00	2, 456 00	.....	76, 956 00
Humboldt	20, 130 37	9, 600 00	.....	.....	29, 730 37
Inyo.....	7, 498 04	17, 500 00	59, 961 49	13, 500 00	98, 459 53
Kern.....	22, 003 00	50, 000 00	.....	.....	72, 003 00
Lassen.....	7, 500 00	7, 500 00	150 00	.....	15, 150 00
Los Angeles .....	.....	22, 500 00	445 00	1, 500 00	24, 445 00
Mariposa	87, 177 00	62, 000 00	100 00	.....	149, 277 00
Merced .....	.....	10, 000 00	.....	.....	10, 000 00
Modoc .....	.....	60, 000 00	.....	.....	60, 000 00
Mono	477, 860 41	5, 000 00	88, 349 49	3, 500 00	574, 709 90
Napa .....	.....	.....	5, 000 00	.....	5, 000 00
Nevada	1, 138, 873 68	1, 439, 000 00	4, 835 43	.....	2, 582, 709 11
Placer	507, 801 51	398, 500 00	411 43	.....	906, 712 94
Plumas	688, 307 71	152, 000 00	.....	.....	840, 307 71
Sacramento.....	253, 522 00	100, 000 00	.....	.....	353, 522 00
San Bernardino	3, 000 00	20, 000 00	2,283,436 37	80, 000 00	2, 386 436 37
San Diego	71, 125 00	20, 000 00	.....	2, 000 00	93, 125 00
San Joaquin.....	.....	2, 500 00	.....	.....	2, 500 00
Shasta.....	236, 004 75	181, 000 00	9, 123 38	100, 000 00	426, 228 13
Sierra.....	1, 060, 380 97	373, 500 000	10 54	.....	1, 433, 891 51
Siskiyou	119, 658 70	219, 000 00	.....	.....	338, 658 70
Stanislaus	18, 660 00	.....	.....	.....	18, 660 00
Trinity	175, 347 69	162, 800 00	10, 00	.....	338, 157 69
Tulare .....	.....	7, 500 00	.....	.....	7, 500 00
Tuolumne	149, 503 34	171, 400 00	1, 273 00	200 00	322, 376 34
Yuba.....	132, 448 73	75, 000 00	.....	.....	207, 448 73
Total	8, 347, 741 71	4, 313, 300	2, 463, 535 91	104, 500 00	15, 229, 080 62

WELLS, FARGO & CO.'S SHIPMENTS OF GOLD AND SILVER FROM THE
COUNTIES OF CALIFORNIA FOR THE TWELVE MONTHS ENDING JANUARY
1, 1886.

County.	Gold.	Silver.	Total.
Amador.....	\$1,944,396 00	-----	\$1,944,396 00
Butte.....	613,654 00	\$3,700 00	617,354 00
Calaveras.....	485,971 00	-----	485,971 00
Colusa.....	6,100 00	-----	6,100 00
Del Norte.....	6,452 00	-----	6,452 00
El Dorado.....	368,722 00	75 00	368,797 00
Fresno.....	63,955 00	-----	63,955 00
Humboldt.....	12,662 00	-----	12,662 00
Inyo.....	38,265 00	56,308 00	94,573 00
Kern.....	68,885 00	-----	68,885 00
Lassen.....	200 00	-----	200 00
Los Angeles.....	12,993 00	865 00	13,858 00
Mariposa.....	143,035 00	-----	143,035 00
Merced.....	8,557 00	-----	8,557 00
Mono.....	493,462 00	34,950 00	528,412 00
Modoc.....	56,642 00	-----	56,642 00
Napa.....	-----	94 00	94 00
Nevada.....	2,347,387 00	5,345 00	2,352,732 00
Placer.....	828,931 00	-----	828,931 00
Plumas.....	750,419 00	-----	750,419 00
Sacramento.....	370,479 00	-----	370,479 00
San Bernardino.....	19,561 00	2,399,191 00	2,418,752 00
San Diego.....	70,535 00	1,800 00	72,335 00
Shasta.....	408,680 00	5,652 00	414,332 00
Sierra.....	1,449,892 00	-----	1,449,892 00
Siskiyou.....	324,489 00	-----	324,489 00
San Joaquin.....	2,175 00	-----	2,175 00
Stanislaus.....	10,810 00	2,500 00	13,310 00
Tulare.....	6,878 00	-----	6,878 00
Trinity.....	313,997 00	-----	313,997 00
Tuolumne.....	293,620 00	-----	293,620 00
Yuba.....	225,083 00	-----	225,083 00
Others.....	1,005 00	39,178 00	40,183 00
Total.....	11,747,892 00	2,549,658 00	14,297,550 00
Their estimate by other conveyances.....	590,122 00	-----	590,122 00
	12,338,014 00	2,549,658 00	14,887,672 00
Lead and copper included in value of base ores.....	-----	-----	149,000 00
Total.....	-----	-----	15,036,672 00

CHAPTER III.

COLORADO.

By POSEY S. WILSON,

Assayer in charge United States Mint, Denver, Colo.

The mining regions of Colorado are embraced in what is known as the mineral belt, running northerly and southerly very near the centre of the state, and comprising about one-third of its area, some 30,000 square miles. Veins and deposits of ore and gold-bearing gravel have been found outside this belt, notably in the north and southeastern portions of the state, but so far as reported they have not produced any considerable value during the past year. Twenty-one counties are embraced in this mining area.

The condition of the mining industry during the year may be described as prosperous. There has probably been an increased production; the mining area has been considerably enlarged; new mines have been developed in several counties; the number of *producing mines* has been augmented; smelting and milling facilities for treating the ore have been extended and improved; the average tonnage value of the ore treated has been higher than in previous years; some abandoned mines have been reopened and made productive; considerable advancement has been made in mechanical concentration; there is no record of the exhaustion of any famous mine, and the tendency in mine management has been towards conservatism and economy. Gold mining has been more actively prosecuted than for many years both upon lode properties and placer diggings. Experienced men are perfecting arrangements to mine for gold on a scale never before attempted in this state. Exhaustive tests of lode and placer claims in some districts have indicated richness to ground that has been idle for many years. In consequence of this the heaviest and best improved mining appliances for rapid work and for the close saving of values have been or are being provided.

The method of smelting has been changed considerably during the year, owing to the fact that the supply of lead has fallen below the demand. The smelters have been forced to use less lead and to give preliminary roasting to rebellious ores, instead of charging them raw, in small quantities, as heretofore. They have also contracted for the

entire output of heavy lead producers, or purchased outright mines of this character to procure the amount absolutely necessary for their water-jacket furnaces. Two of the larger smelting establishments have purchased lead-producing mines, and are thus able to control the lead they require. The cupellation of base bullion has become necessary in Leadville through the scarcity of lead ores and the excessive quantity of dry ores that the mines have been yielding of late. The competition for the purchase of lead ores has been so great that the prices paid have had the effect to greatly reduce the smelters' profits, and, in instances, to cause loss instead of profit. For the first six months of the year the quoted price of lead averaged $3\frac{3}{5}$ cents per pound, but the price paid the miner was higher than the quotations justified. The last six months the quoted price ruled from 4 cents to $4\frac{7}{8}$, and the smelters paid proportionately higher rates to the miner. During the entire year the price paid was higher than the average of market quotations.

It is impossible to obtain strictly accurate statistics of the production of the precious metals with the facilities that are available. The sources from which the information is derived, upon which the following estimate is made, are the reports by the smelters of their production, the reports of bullion deposited at the United States mints and assay offices, the reports of shipments out of the state for treatment, and bullion bought by banks.

The product of the smelters in the state cannot be given exactly, for the reason that some smelters declined to state the amount or value of their product. There is also danger that the Colorado bullion deposited at the mints and New York assay office may have here been included in the product of the smelters and thus in part duplicated. For instance, the entire gold product of the Boston and Colorado Smelting Company is included in the deposits at the assay office at New York. The silver also purchased by these works appears partly in the returns of small mills and smelters. It is difficult to ascertain the exact origin of all the domestic bullion deposited at Government institutions. It is believed, however, that my information in regard to deposits at the mints is sufficiently thorough to prevent any important error in estimates based upon them.

The information obtained from the samplers and ore brokers as to the value of ore shipped out of the state for treatment is exact so far as their shipments are concerned, but they do not include all the ore shipped. Some mines have shipped their product direct to foreign smelters, and it has been found impossible to obtain its exact value in all cases. Enough, however, has been learned of its tonnage and average value to make the estimate of the amount very nearly correct.

Some gold has been sold by the producers directly to manufacturers. As the manufactures, generally, keep no records showing whether their purchases were of gulch, retort, or old gold which had been previously used as jewelry, only an estimate of the amount which found a market in this way can be made. I estimate this to amount to \$50,000.

Efforts to obtain the product of stamp mills separately are useless, as many of them do not know the value they produced. Many of them are custom mills, treating ores by the ton for miners and turning over the product as a retort to its owners, knowing perhaps its weight, but not its fineness and consequent value.

Efforts to obtain the product of each mine in the state are also useless, as evidenced by the report of the state census commissioner, who reports that more than half of the miners in the state refused to report their product. It is difficult to obtain accurate estimates from the reports of the refiners, as they often get base bullion, the source of which they do not know exactly or which may be reported as from two or more states or territories, without stating what portion is to be credited to each. Great difficulty has been encountered in the attempt to ascertain the product of each county separately. The reason for this lies in the fact that public samplers and ore-buyers, as well as smelters, handle large amounts of ore, and their records of the sources of its production are not carefully kept. The ore also loses its identity in sales by one smelter or purchaser to another. Hence we find that often the largest item in the reports of smelting establishments, as, for instance, the "Argo Works," is "miscellaneous," with a foot-note to the effect that it is not possible to state in what counties this ore was produced. Smelters occasionally accommodate each other by selling or loaning ore of a particular kind required for utilizing other ores on hand, and this is a great cause of confusion in compiling statistics.

The reports of the product of each county, as made by local papers, which are naturally anxious to make as good a showing as possible for their respective localities, aggregated would give a total as the product of the state, largely in excess of the real product.

I have preferred to give such facts as could be obtained, leaving out conjectures from the calculation.

The following table shows by counties deposits at the mint at Denver. Beneath is that portion of Colorado's product which found its way into the United States mints and assay offices outside of Colorado.

So far our figures are exact and definite, but in the appended table, placed for convenience in juxtaposition with the mint and assay-office work, are the amounts given by mills, smelters, ore-buyers, and banks. Some of these institutions put the bullion through one process, others through another, and I have not found it possible to estimate that part which may have been twice handled.

GOLD AND SILVER OF DOMESTIC PRODUCTION DEPOSITED AT THE UNITED STATES MINT AT DENVER DURING THE CALENDAR YEAR 1885.

Counties.	Gold.	Silver.	Total.
Arapahoe	\$270 86	\$1 12	\$271 98
Boulder	20,198 50	207 91	20,406 41
Clear Creek	45,318 57	809 73	46,128 30
Costella	216 63	69	217 32
Chaffee	28,526 31	261 92	28,788 23
Conejos	276 98	57	277 55
Douglas	1,419 89	90	1,420 79
Dolores	3,718 87	104 12	3,822 99
Eagle	162 05	3 15	165 20
Gilpin	475,864 41	6,722 84	482,587 25
Gunnison	4,392 54	67 00	4,459 54
Garfield	112 88	58	113 46
Jefferson	696 58	6 10	702 68
Lake	105,531 44	1,627 23	107,158 67
Mesa	430 73	3 95	434 68
Ouray	661 70	18 63	680 33
Pueblo	205 53	1 56	207 09
Park	35,914 50	805 78	36,720 28
Pitkin	15,512 22	238 74	15,750 96
Rio Grande	17,971 94	186 85	18,158 79
Routt	23,104 24	883 93	23,988 17
Summit	198,525 14	3,699 53	202,224 67
San Juan	34,926 00	237 75	35,163 75
San Miguel	30,557 78	684 91	31,242 69
County not known	41,672 71	1,633 51	43,306 22
Total	1,086,189 00	18,209 00	1,104,398 00
Colorado gold at Philadelphia	42,596 00	1,025 00	43,621 00
Colorado gold at San Francisco	1,913 00	21 00	1,934 00
Colorado gold at New York assay office	1,704,301 00	990,939 00	2,695,240 00
Colorado gold at Saint Louis assay office	15,611 00	472 00	16,083 00
Total Colorado gold and silver handled by mints and assay offices	2,850,610 00	1,010,666 00	3,861,276 00
Reported by mills, smelters, ore-buyers, and banks in Colorado and Kansas City, at coining value	2,893,672 18	16,162,437 81	19,056,109 99
Colorado gold and silver worked at Omaha, at coin- ing value	1,315,183 87	5,728,754 00	7,043,937 87

Of the deposits of gold at the mints and assay offices during the calendar year, classified as unrefined, the sum of \$2,850,610 was reported as Colorado bullion.

Eight of the leading smelters report having refined of Colorado gold during the year \$2,823,536. Of this, however, a portion was not classified at the Government institutions as refined bullion, but entered into the unrefined. For instance, the gold bullion deposited at the New York assay office, classified as unrefined and credited to Colorado, \$1,704,301, included the product of the Boston and Colorado Smelting works, \$1,141,708, and possibly of some of the other smelters.

The Omaha and Grant smelter reports that it produced in refined gold bars during the year, of Colorado's product, \$1,315,184. This at least is to be added to the amount of unrefined deposited at the mints, which will make a total product of gold for the state of about \$4,200,000. Of silver the amount of unrefined deposited at the mints and assay offices during the year was \$1,010,666.

Eight of the large refineries report to the Bureau of the Mint that they handled during the year, of Colorado's product, \$16,837,708 silver bullion. It is possible that the amount of unrefined, deposited at the mints, being principally at the New York assay office, included a portion of the product of some of these refineries which was not of sufficient fineness to be classified as refined; so that, allowing for material from other states, which may be included in the amount credited to Colorado, it is safe to say that the production of silver was not less than \$16,000,000.

This in tabulated form stands—

Colorado gold handled at mints and assay offices.....	\$2,850,610
Colorado gold handled at Omaha smelter.....	1,315,184
Total.....	4,165,794

That handled at other smelters is included in the item which shows the footings of the mint work because it went to the mints for refining, while the Omaha smelter makes fine bars and sells them as such in open market.

The silver reported by smelters is	\$14,813,891
The silver reported by mints and assay offices.....	1,010,666
Total	15,824,557

The amount of gold reported from Colorado smelters, \$2,717,000 is accounted for in other totals, yet has to appear in the footings of reports of gold and silver handled by smelters.

Total gold	\$4,165,794
Total silver.....	15,824,557
	19,990,351
Lead and copper produced incidentally to mining for gold and silver....	4,300,000
Total product.....	24,290,351

The above figures do not include silver sent to smelters in foreign countries, nor am I able to hazard even a guess as to its quantity or value.

PRODUCTION OF THE PRINCIPAL SMELTERS FROM COLORADO ORE DURING
THE YEAR ENDING DECEMBER 31, 1885.

Name.	Location.	Gold value.	Silver value.	Total.
Lafayette Reduction Company.....	Durango, Colo ..	\$1, 691	\$9, 006	\$10, 697
San Juan and New York Mining and Smelting Company.	....do	41, 931	407, 176	449, 107
Omaha and Grant.....	Denver, Colo	935, 401	2, 358, 122	3, 293, 523
Boston and Colorado .....	....do	961, 200	1, 744, 200	2, 705, 400
American Smelter	Leadville, Colo..	89, 356	1, 119, 439	1, 208, 795
Harrison Reduction Works .....	....do	12, 898	1, 035, 590	1, 048, 488
La Plata Smelter .....	....do	11, 823	1, 842, 843	1, 854, 666
Manville Smelter .....	....do	18, 887	394, 827	413, 714
Fryer Hill Smelter.....	....do	5, 540	60, 480	66, 020
Crysolite Mill.....	....do		32, 348	32, 348
Grandview Smelter	Rico, Colo	7, 979	140, 063	148, 042
Pasadena Smelter.....	....do	81, 000	308, 200	389, 200
Golden Smelter Company.....	Golden, Colo....	293, 661	428, 606	722, 267
Aspen Smelter.....	Aspen, Colo		1, 024, 319	1, 024, 319
Royal Gorge	Canon, Colo	17, 031	397, 016	414, 047
Colorado Smelting Company	Pueblo, Colo	12, 393	586, 172	598, 565
Pueblo Smelting Company.....	....do	225, 761	2, 917, 609	3, 143, 370
Massachusetts Smelting Company.	....do	1, 013	7, 875	8, 888
Total .....	.....	2, 717, 565	14, 813, 891	17, 531, 456

In this statement silver is calculated at its coining value.

Mr. John J. Valentine, superintendent Wells, Fargo & Co., gives the value of Colorado's product for 1885 at, gold, \$2,653,000; silver, \$18,719,000; a total of \$21,372,000. Included in this value is \$4,300,000 in lead and copper, in nearly equal percentage. Of the silver item a considerable part is gold, inasmuch as the railroad company received much of it in base bullion to be carried to some point for separating. Estimates from smelters' returns make the value of lead and copper \$4,330,000 for the year.

CHAPTER IV.

DAKOTA.

By AUGUSTINE HEARD.

There are no points of especial interest to signalize this year in the mining industries of Dakota in so far as relates to the precious metals. The production of gold and silver has followed its usual course, and chiefly by a slight reduction of the grade of the ore the amount of gold bullion is somewhat less than the total of last year. It comes, as a rule, from the same mines, all of which do not report, and our main reliance for accurate statistics is the assay office at New York, to which almost all the gold of the territory is sent. Owing to the fact that the charges for handling silver are higher than is customary with private refineries, but little of this metal finds its way there. The figures of the receipts of bullion at that office for the calendar year 1885 are subjoined:

Mines.	Gold.	Silver.	Total.
Caledonia.....	\$132,908 02	\$1,475 58	\$134,383 60
Father De Smet	353,097 40	3,738 55	356,835 95
Deadwood-Terra.....	401,069 98	3,828 15	404,918 13
Homestake	1,189,174 35	11,404 92	1,200,579 27
Highland	370,310 27	3,354 57	373,664 84
Iron Hill	107 49	13,836 95	13,944 44
Uncle Sam.....	8,177 04	60 63	8,237 67
Sitting Bull	540 33	22,796 27	23,336 60
Mines unknown	409,326 81	5,030 60	414,357 41
	2,864,731 69	65,526 22	2,930,257 91

It should be stated that the above returns, as classified by mines, are for only eleven months of 1885, commencing with February, orders so to separate them only having been then received. The figures for the month of January are included under "Mines unknown."

The Caledonia is an old mine, but a new producer. The old hoisting works were destroyed by a cave last July, and new hoisting works have been erected. The mill was started in the spring, and, after years of disappointment to its stockholders, it has now begun to pay dividends. The property is said to be in good condition, and about 80 men are

employed. The superintendent reports, in October, the large leader on 425-foot level has struck the hanging wall, and shows an immense body of ore, averaging \$7 per ton. It paid \$10,000 in November and \$10,000 in December.

The total production of the Father de Smet is officially stated to have been \$381,697.41 against last year's \$474,552.94, a falling off of \$92,855.53, which is accounted for by a lowering of the grade of the ore from \$4.45 to an average of \$3.57 per ton. About the same number of tons were milled, 106,855 in 1885, against 106,540 in 1884.

The output of the Homestake exceeds that of last year by \$51,249—\$1,307,039 in 1885, against \$1,255,790 in 1884. The Deadwood-Terra falls short \$43,910—\$441,491 in 1885, against \$485,401 in 1884. The Highland shows a deficiency of \$94,735, its production having been \$416,686 in 1885, against \$511,421 in 1884. The result appears more clearly in the following table:

Mines.	Total pro- duction 1884.	Total pro- duction 1885.	Increase.	Decrease.
Homestake	\$1, 255, 790	\$1, 307, 039	\$51, 249	.....
Deadwood-Terra	485, 401	441, 491	.....	\$43, 910
Highland	511, 421	416, 686	.....	94, 735
Father De Smet	474, 553	381, 697	.....	92, 856
	2, 727, 165	2, 546, 913	51, 249	231, 501 51, 249
Net decrease				180, 252

These four mines produce almost all the gold in Dakota.

There is nothing especial to remark about the other mines, except that work has been actively pushed in the Iron Hill, and now at the close of the year it is prepared to take a prominent position as a producer. The mill, new, 20 stamps, is said to be running successfully, and turning out bullion. The ore is free-milling silver.

The only other silver mine of note in the territory is the Sitting Bull, which is situated at Galena, about 12 miles south of Deadwood. It has a very complete plant, consisting of a 30-ton smelter and a 20-stamp roasting and amalgamating mill, and is said to be capable of producing \$800 per day, but it is in litigation, and the works have been closed the greater part of the year.

The dividend-paying mines of Dakota are not numerous. The Father De Smet paid, during 1885, ten dividends of \$20,000 each. The Homestake, on 125,000 shares, paid four dividends of 25 cents per share, three of 30 cents, two of 35 cents, two of 40 cents, and one of 80 cents; or, in

all, \$4.20 per share; and the Big Bend Hydraulic, \$30,000 in all, aggregating \$755,000, or in tabulated form, thus:

Big Bend Hydraulic.....	\$30, 000
Father De Smet.....	200, 000
Homestake	525, 000
	<hr/>
	755, 000

We may now attempt an estimate of the total production of gold and silver in the territory. The amount of gold deposited in the New York assay office we have seen was \$2,864,731, to which we may add the small deposit in the Philadelphia mint of \$435, giving an aggregate of \$2,865,166 in the Government establishments.

Wells, Fargo & Co. report the transportation from the territory during the year at \$2,606,623 gold and \$120,000 silver bullion, against last year's \$2,876,847 gold and \$110,000 silver, a decrease of \$270,224 gold and an increase of \$10,000 silver.

A large portion of the product of the placer mines (over \$100,000 in all) is sent to private refiners, and probably never reaches the New York assay office. This is also the case with much of what is brought out privately by miners, travelers, &c., and the identity of its source of production, Dakota, is lost.

It may fairly be presumed that the amounts deposited in the New York assay office and the Philadelphia mint preserve, one year with another, the same proportion with the total production of the territory; and if last year the deposits of gold in those institutions amounted to \$3,012,030, as appears to have been the case, and this year to \$2,865,166, the difference between them, \$146,864, would indicate about the reduction to be made in an estimate of the total production of the territory.

As regards silver, substantially the same work appears to have been done this year as last, and there is no good reason to suppose that the production has been less. In 1886 we may look for an increase.

The Iron Hill will probably have been producing steadily through the year, and if litigation in the Sitting Bull should be brought to a close that mine would at once contribute largely to the total; but the entire output of silver in Dakota can never be important.

We have seen that the silver in the New York assay office represented a value of \$65,526.22, about half of which was extracted from gold ores, and that by the statement of Messrs. Wells, Fargo & Co. \$120,000 of silver bullion left the territory.

Taking, then, these various items into consideration, especially the reduction of gold apparent in the deposits in the Government institutions and in the figures supplied by Messrs. Wells, Fargo & Co., together with the positive deficiency in the output of the four leading mines, I am disposed to place the total production of gold in the territory at \$3,150,000, and of silver at \$150,000, giving an aggregate of \$3,300,000, or a reduction upon last year of \$150,000 gold.

Great benefit will be derived from the extension of railways into the territory. At the commencement of 1885 the nearest point to the Black Hills was the station of the Fremont, Elkhorn and Missouri Valley railroad (under the control of the Chicago and Northwestern) at Valentine, 239 miles from Rapid City, but in August it was advanced to Chadson, 136 miles nearer, and construction is now being actively prosecuted; so that the line will reach Rapid City within a few months. Supplies will then become cheaper, and we may reasonably expect a fall in the rate of wages, both essential to the prosperity of the mining interests, of which the Black Hills are the centre.

The establishment of a school of mines at Rapid City by act of legislature is an incident worthy of note as indicating a desire to foster studies which may contribute to the advancement of the territory. Land has been allotted for the buildings, which are now being erected, and a suitable appropriation has been made for its support.

CHAPTER V.

IDAHO.

By H. F. WILD,

Assayer in charge United States Assay Office, Boise City, Idaho.

Ada county is practically entirely devoted to agriculture, the gold produced being taken from bars along the various rivers and creeks, worked irregularly, and chiefly by persons whose main interest is in other pursuits.

Alturas county is the foremost in the territory in amount of production and also in the progress that has been made towards placing mining on a permanent basis. I am indebted to Mr. Richard A. Parker, mining engineer and United States mineral surveyor, for the following facts concerning the Atlanta district. But little work has been done in the mines, as the majority of the more developed have been under bond for sale. There are in the district five stamp-mills of commercial importance. Four of these are operated by water-power and the fifth by steam. Two of these mills, having 25 stamps and a capacity of 27 tons of ore per twenty-four hours, are provided with chloridizing roasters, pans, and settlers for treating silver ores; the other three, having 40 stamps and a daily capacity of 60 tons, are provided with Frue vanners, or Golden Gate concentrators, for saving sulphurets.

The district known as Wood River covers a number of mining districts which will be here considered under one head.

Having direct railroad communication with Omaha, Salt Lake, and the other centres for ore reduction, and a large and well equipped smelting establishment at Ketchum, within its own borders, the progress of the district has been rapid and work reduced to a systematic and business-like basis. A number of the mines have concentrators connected with them, and the ore being galena is easily and cheaply brought to a grade which will allow of profitable shipment.

While the production of the year was less than had been expected by those interested, the work in some of the mines proved satisfactorily that the ore continues in depth, a question that had been doubtful, and whose settlement assures in great measure the future of the district.

In Boisé county the chief interest is still, as it has been, placer mining. This is carried on chiefly by men who have owned their claims for a number of years, who have created a vast system of ditches and are working well-known ground, the amount of production depending almost entirely on the length of the season—that again depending on the amount of snow that falls during the winter. But as the area of placer ground decreases more attention is given to quartz-mining, and there are now in the district known as Boisé Basin seven mills with fifty-three stamps, having sufficient capacity to enable the prospectors to put their gold into merchantable form.

At Banner a twenty-stamp mill works the ore of the Banner mine.

In Cassia county the mining interest is also confined to placers along the Snake River. While it has long been known that the sands of this river contain gold in paying quantities, its extreme fineness has prevented saving it commercially until what is known as the “burlap” machine came into use, by which it is saved closely and economically. This has greatly increased the production of the region, and afforded employment for a large number of men.

Owyhee county.—Silver City or Carson district is the only place in the county in which mining has been carried on beyond prospecting during the year. The district, once very active and productive, has for a number of years lain nearly dormant, but the work of the year has been very encouraging. The amount of bullion produced is unusually large for the number of men engaged, not more than thirty miners having been at work during the year. The reduction capacity of the district is large in proportion to its present needs, there being three mills with thirty-five stamps, and one arrastra, the combined daily capacity being sixty-five tons of ore.

Shoshone county.—The production of Cœur d’Alene has been confined to placers during the year, but a great deal of work has been done in developing the quartz mines.

Two mills have been erected and others are contemplated.

From Custer and other counties which I was unable to visit I have no report, excepting as to the production. The year has been a fairly prosperous one in all the mining districts of the territory, and from what I have seen and can learn from other sources, in many of them a large number of properties have advanced from the stage of “prospects” to that of producing mines, development and prospecting have both been pushed with energy, the reduction capacity has been largely increased, means of communication have been improved, and the end of the year finds the mining industry in a far more more prosperous and encouraging state than the beginning.

The various mints and assay offices of the United States received from Idaho the following amounts of gold and silver during the calendar year 1885—silver at the price paid by the Government:

	Gold.		Silver.	
	Standard ounces.	Value.	Standard ounces.	Value.
MINTS.				
Philadelphia	51.834	\$964.35	1,508.40	\$1,477 01
San Francisco	16,257.427	302,388.14	21,648.45	21,225 48
ASSAY OFFICES.				
Boisé City	5,688.488	105,805.85	1,355.74	1,328 50
Helena	14,673.998	292,936.36	2,447.90	2,398 42
New York	4,512.174	83,947.40	67,608.82	67,564 25
Saint Louis	471.018	8,760.93	280.23	274 72
Total	41,654.939	794,803.03	94,849.54	94,268 38
Total valuation of gold and silver				889,071 41

John J. Valentine, esq., vice-president Wells-Fargo Company, reports as follows for Idaho (silver presumably at average commercial value):

Nature.	Mode of conveyance.	Amount.
Gold dust and bullion	By express	\$905,946
Do	Other conveyances	200,000
Silver bullion	By express	867,410
Ores and base bullion	By freight	2,450,000
Total		4,423,356

The following amounts are reported to me by mine owners, managers of mills, reduction works, or local bankers, and assayers, who buy dust and bullion, or others whose knowledge of the district in which they reside enables them to make accurate and trustworthy reports :

[Silver at its commercial value.]

Production.	Value.
Gold	\$1,388,686
Silver	3,027,116
Total	4,365,802
Lead	639,069
Grand total	5,004,871

Adding to the above 15 per cent. to cover amounts produced in districts from which I have no reports, amounts produced by Chinese, and amounts carried out of the territory by private individuals, I estimate the total product of the territory at \$5,755,602.

PRODUCTION OF DEEP MINES.

[Silver calculated at \$1 per ounce, except for Wood River County, which is \$1.02.]

Names of mines, by counties and districts.	Ore.	Lead.	Gold.	Value of gold.	Silver.	Value of silver.	Total value of gold and silver.
ALTURAS COUNTY.							
<i>Atlanta district.</i>							
	<i>Tons.</i>	<i>Pounds.</i>	<i>Ounces.</i>		<i>Ounces.</i>		
Various			485	\$10,025	110	\$110	\$10,135
Monarch			2,033	41,900	42,022	42,022	83,922
Buffalo			198	4,031	7,907	7,907	11,938
Tahoma			67	1,381	6,615	6,615	7,996
Camas No. 2			445	9,200			9,200
<i>Wood River district.</i>							
Jay Gould	33	34,260			3,379	3,445	3,445
Eureka	626	776,284			44,884	45,782	45,782
Humburg	5	1,903			655	667	667
Montana	41	32,341			3,885	3,962	3,962
O. K.	32	40,208			3,615	3,688	3,688
Nay Aug.		93,115			9,712	9,907	9,907
Ornament	10	2,047			989	1,009	1,009
Humbolt	2	508			213	217	217
Cyclops	36	46,844			1,996	2,036	2,036
Star	31	22,977			3,260	3,325	3,325
Homestake	64	58,886			4,861	4,957	4,957
Courier	27	27,846			2,290	2,335	2,335
Bay State	108	144,813			19,077	19,459	19,459
Bullwhacker	20	20,156			1,986	2,016	2,016
King of the West ..	40	12,073			4,382	4,470	4,470
Parker	326	316,416			113,089	115,351	115,351
Bullion	426	477,230			64,219	65,504	65,504
Narrow Gauge	285	376,356			27,819	28,375	28,375
Valley Vein	22	31,333			4,829	4,926	4,926
Red Elephant	55	55,558			\$5,670	\$5,784	\$5,784
Whistler	10	6,237			384	392	392
Forest Creek	4	6,418			434	443	443
Red Cloud	39	51,441			2,865	2,923	2,923
Enterprise	7	9,886			720	735	735
Pass	26	33,576			3,675	3,749	3,749
Caledonian	7	4,708			933	938	938
Bonanza King	8	7,989			745	760	760
Cross	144	864			71	72	72
Climax	21	5,556			1,594	1,626	1,626
Montezuma	42	9,774			5,580	5,692	5,692
Mountain View ..	6	5,874			1,111	1,133	1,133
Oriental	1	653			310	316	316
Justice	25	31,437			2,214	2,258	2,258
Idaho Democrat ..	13	11,097			1,146	1,169	1,169
Illinois	6	7,723			603	615	615
Horn Silver	12		4	\$72 00	3,293	3,359	3,431
Galore	53	11,117			12,220	12,364	12,364
Argent	69	90,641			7,842	7,999	7,999

PRODUCTION OF DEEP MINES—Continued.

Names of mines, by counties and districts.	Ore.	Lead.	Gold.	Value of gold.	Silver.	Value of silver.	Total value of gold and silver.
ALTURAS COUNTY—Continued.							
<i>Wood River district—Cont'd.</i>	<i>Tons.</i>	<i>Pounds.</i>	<i>Ounces.</i>		<i>Ounces.</i>		
McCarter.....	14	13, 602	.....	.....	1, 181	\$1, 204	\$1, 204
O. C.....	31	18, 893	.....	.....	4, 221	4, 305	4, 305
Eagle Bird.....	17	22, 108	.....	.....	1, 514	1, 533	1, 533
Ellmore.....	6	4, 518	.....	.....	470	480	480
Sundry small mines	47	46, 163	.....	.....	4, 700	4, 794	4, 794
Queen of the Hills.	3, 637	2, 181, 900	.....	.....	464, 079	473, 361	473, 361
Ontario.....	.....	498, 487	.....	.....	.....	30, 658	30, 658
Tyrannus.....	.....	14, 678	.....	.....	1, 230	1, 255	1, 255
Senate.....	250	40, 000	.....	.....	.....	15, 000	15, 000
Pride of Idaho.....	.....	23, 031	.....	.....	.....	5, 102	5, 102
Maud S.....	.....	.....	.....	.....	4, 800	4, 896	4, 896
Elkhorn.....	.....	450, 000	.....	.....	43, 130	43, 992	43, 992
Idahoan.....	.....	2, 189, 249	.....	.....	115, 794	118, 110	118, 110
Mayflower.....	.....	228, 896	.....	.....	40, 100	40, 900	40, 900
Minnie Moore.....	4, 079	528, 798	.....	.....	369, 149	376, 933	376, 933
Smelting Company.	6, 304	3, 758, 462	480	\$9, 948	480, 481	490, 090	500, 038
Total.....	17, 067	12, 884, 930	3, 712	76, 557	1, 954, 053	2, 043, 025	2, 119, 582
BOISE COUNTY.							
<i>Quartzburg district.</i>							
Gold Hill.....	.....	.....	1, 700	\$19, 600	.....	.....	\$19, 600
<i>Banner district.</i>							
Elmira.....	.....	.....	.....	.....	123, 000	123, 000	123, 000
CUSTER COUNTY.							
<i>Yankee Fork district.</i>							
Unknown and Custer.	.....	21, 481, 000	2, 773	57, 413	325, 340	325, 340	382, 753
<i>Bay Horse district.</i>							
Rainshorn smelter.	.....	3965, 529	30	621	248, 272	248, 272	248, 893
<i>Other districts.</i>							
Various.....	.....	.....	2, 681	55, 526	226, 388	226, 388	281, 914
LEMHI COUNTY.							
Entire county.....	.....	41, 547, 849	13	207	23, 740	23, 740	23, 947
Total.....	.....	53, 994, 378	7, 197	133, 367	946, 740	946, 740	1, 080, 107

¹Value, \$483, 185. ²Value, \$55,537. ³Value, \$42,303. ⁴Value, \$58,044. ⁵Value, \$155,884.

PRODUCTION OF DEEP MINES—Continued.

Mines.	Ore.	Lead.	Gold.	Value of gold.	Silver.	Value of silver.	Total value gold and silver.
	<i>Tons.</i>	<i>Pounds.</i>	<i>Ounces.</i>		<i>Ounces.</i>		
OWYHEE COUNTY:							
Oro Fino.....	170	.....	3,328	\$66,870	12,553	\$12,553	\$79,423
Silver Cord.....		.....	277	5,736	1,240	1,240	6,976
Morning Star.....		.....	96	2,000	500	500	2,500
Boycott.....		.....	27	571	32	32	603
Ida Ellmore.....		.....	43	884	170	170	1,054
Empire.....		.....	41	827	606	606	1,433
Do.....		.....	42	839	1,219	1,219	2,058
Minnesota.....		.....	150	3,040	1,932	1,932	4,972
Red Jacket.....		.....	136	2,625	343	343	2,968
Ruth.....		.....	33	683	90	90	773
San Juan.....		.....	44	916	208	208	1,124
Mahogany.....		.....	4	73	37	37	110
Whiskey.....		.....	48	992	175	175	1,167
Ben Butler.....		.....	21	442	392	392	834
Gen. Wolsley.....		.....	39	816	208	208	1,024
Empire State.....		.....	428	8,602	801	801	9,403
Idlewild.....		.....	87	1,766	4,448	4,448	6,214
Unnamed.....		.....	348	7,000	2,000	2,000	9,000
Black Jack.....		.....	49	1,000	6,000	6,000	7,000
Potosi.....		.....	11	225	2,100	2,100	2,325
Tailings.....		.....	133	2,753	2,297	2,297	5,050
			5,385	108,660	37,351	37,351	146,011

PRODUCTION OF PLACER MINES.

County.	District.	Mine.	Ounces gold.	Total value.
Ada.....	Various.....	Various.....	185	\$2,870
Alturas.....	Glenn's Ferry.....	Bonanza.....	61	1,068
	Bliss.....	Fraction.....	150	3,000
	do.....	Clarkins & Hunt..	26	460
	Taponis.....	Woodworth.....	75	1,500
Bingham.....	North Willow.....		210	4,000
	Cariboo.....		200	4,030
Boisé.....	Idaho City.....	}	37,500	600,000
	Banner Granite...			
	Creek, &c.....			
Cassia.....	Salmon Falls.....	Hunt's.....	416	8,093
	Fuller's.....		251	4,836
Lemhi.....	Leesburg.....	Various.....	3,311	53,000
Nez Percés.....	Hoodoo.....		625	10,000
Owyhee.....	Castle Creek.....	Corning.....	64	1,280
	Silver City.....	Carson.....	1,923	25,000
Shoshone.....	Cour d'Alene....	Placers.....	18,240	300,965
			63,237	1,020,102

TOTAL PRODUCTION OF IDAHO, 1885.

REPORTED.

Counties.	Gold value.	Silver.	
		Commercial value.	Coining value.
Ada	\$2, 870		
Alturas	82, 585	\$2, 043, 025	\$2, 330, 723
Bingham	8, 030		
Boisé	619, 600	123, 000	143, 127
Cassia	12, 929		
Custer	113, 560	800, 000	930, 909
Lemhi	53, 207	23, 740	27, 625
Nez Percés	10, 000		
Owyhee	134, 940	37, 351	43, 463
Shoshone	300, 965		
Total	1, 338, 686	3, 027, 116	3, 475, 847

NOT REPORTED.

Produced by—	Gold.		Silver.	
	Standard ounces.	Value.	Standard ounces.	Coining value.
Chinese and carried away by individuals	7, 189	\$133, 868		
Lemhi County	5, 375	100, 000	166, 666	\$193, 939
Nez Percés County	2, 150	40, 000		
Idaho County	5, 375	100, 000		
Snake River	1, 881	35, 000		
Bingham County	3, 225	60, 000		
Rocky Bar	1, 613	30, 000		
Washington County			27, 777	32, 323
Lava Beds			50, 000	58, 182
Total	26, 808	498, 868	244, 443	284, 444

RECAPITULATION OF THE PRODUCTION OF IDAHO TERRITORY, 1885.

	Gold.		Silver.	
	Standard ounces.	Coining value.	Standard ounces.	Coining value.
Actually reported	71, 954	\$1, 338, 686	3, 363, 462	\$3, 913, 847
Estimated	26, 808	498, 753	244, 443	284, 443
Total	98, 762	1, 837, 439	3, 607, 905	4, 198, 290
Total Gold				\$1, 837, 439
Total Silver				4, 198, 290
Grand total				6, 035, 729

CHAPTER VI.

MONTANA.

By SPRUILLE BRADEN,

Assayer in charge United States Assay Office, Helena, Mont.

A review of the mining industry of Montana for the year 1885 shows substantial progress, not only in an increased production of the precious and baser metals over preceding years, but also in a more economic management of developed properties. The gratifying results attained by incorporated companies has stimulated foreign capital to more generous investments in mines deemed to possess value, but undeveloped for want of capital. In consequence of the facilities offered by railroad transportation, owners of mines remote from the large mining centres have found it profitable to ship ores for treatment in eastern cities. Improved processes at many mills and smelting works render practicable the treatment of ores which heretofore could not be worked. The most satisfactory evidence, however, of advancement is the association of abundant capital in the hands of men of large experience whose efforts are directed to the development of mines under patent for many years, but never worked on account of the low-grade character of the ores. By far the larger number of mines in the territory are of this description, and their profitable working necessarily depends upon the operations of the reduction works in their immediate vicinity accompanied with cheap transportation for supplies and mine products. The railroad now building from Helena into the Ten Mile and Red Mountain districts will open one of the most extensive mineral sections of the territory. Another railroad, already projected, from Cinnabar, on the line of the Northern Pacific, will penetrate the New World district, and encourage the development of the mines at Cook City and along the Clark's Fork.

It is difficult to obtain accurate information of the production of precious metals in a territory so extensive as Montana, especially in the absence of any legal requirements to compel mine-owners to make reports of their product. Acting upon instructions from the Director of the Mint relative to the plan of the present report, I have made use only of information given me directly by superintendents of incorporated companies, by purchasers and forwarders of bullion, and, in minor instances, by bankers long resident in the larger mining com-

munities. So far as possible, with the means and time at my disposal, I have visited the large mining centres and some of the more remote points. While, in some instances, I encountered reluctance on the part of the superintendents or owners of large properties to furnish information, from most of those with whom I came in contact I experienced a hearty readiness to furnish me all the information within their power.

I have also, by communications addressed to every known producer or purchaser in the different counties of the territory, endeavored to procure accurate reports as to the amount produced by individuals or companies engaged in placer diggings or operating claims in a small way. But little attention, however, has been paid to these requests, in part, possibly, because at this time of the year gulches and isolated claims are deserted and the proprietors scattered, some to eastern cities, others wintering in the various towns and cities of the territory.

The verification of newspaper reports, save in the case of incorporated companies and large producers, whose annual reports are made public, is, in the main, impossible, for the reason that reporters cannot trace their information. Hence, under instructions, I have felt obliged to discard everything of this character.

The placer contribution to the gold product of the territory is most important, but the amount produced by Chinamen, in the aggregate large, will be an unknown factor, to be arrived at only approximately. In many counties, notably Deer Lodge, Lewis and Clarke, Jefferson, Choteau, Meagher, Beaverhead, Madison, and Gallatin, they are found in every placer district, and in but rare instances do results from their labor appear in any of the channels of exchange. It is a fact well known that only so much of this production is disposed of in sale or barter as suffices for their bare sustenance, the remainder passing through the hands of the six great Chinese companies in San Francisco, the greater part of which is shipped to China in the form of dust.

Their secretiveness and distrust render it difficult to obtain knowledge of their operations. To permit, therefore, the amount produced by Chinese labor to bear its due proportion, I have availed myself of the opinions of those long resident in the counties above referred to, verifying their estimates, as far as possible, by the opinions of lessors of placer properties, and of miners in the vicinity of their workings.

From reports received from the different Government mints and assay offices there was credited to Montana the past year gold \$1,806,549, and silver \$2,126,182, making a total of \$3,932,731. This includes the amount deposited at the United States assay office at Helena, less the amount received and credited to the territories of Idaho and Washington. What proportion of the product of bullion, matte and ore shipped to Argo, Ansonia, Newark, Omaha, Swausea, and other reduction works is ultimately purchased by the Government and appears in the above sum, I have no means of knowing.

The statement of superintendents as to the silver production of properties under their charge has invariably been given in fine ounces. I have calculated all at \$1.03, and as the price has fluctuated considerably, it is possible I have adopted too low an average. Should an increased value be deemed more accurate, the gross production of silver will be somewhat larger.

BEAVERHEAD COUNTY.

The amount credited to the Hecla Consolidated Mining Company is from a statement made to me by the manager. The gold and silver produced by the Argenta, Bannock, and Bald Mountain districts were either purchased by the First National Bank of Dillon and Dillon National Bank, or was the product of ore and bullion purchased and forwarded by the former bank. From Red Rock \$25,000 worth of ore was shipped. The sum of \$38,053, deposited at the United States assay office at Helena, is included in the amount credited to the county.

CHOTEAU COUNTY

Has but two mining districts—Sweet Grass and Little Rockies. With the exception of the small amount produced by Chinamen, it is believed all was received at the United States assay office at Helena.

DEER LODGE COUNTY.

The amounts produced by the Granite Mountain and Hope Mining companies are from statements furnished me by their superintendents. The Penobscot and Bald Butte mines issue no annual reports, but I am indebted to the superintendent and respective owners for the several amounts credited to these properties.

The Cable mine produced in 1884 \$450,000. The works have been operated less the past year. I have not been able to secure a report. Upon information furnished me by competent judges I have placed the amount of its production at \$250,000.

The Blue-eyed Nellie mine, near Anaconda, a new property, has also been a large producer, but its owners have failed to respond to my inquiries, and I am accordingly obliged to depend upon other sources for information.

From Messrs. Clark & Larabie, bankers of Deer Lodge, C. G. Birdseye and Louis Davis, of Blackfoot, J. Abascal, of Beartown, and Kelly & Irvine, of Pioneer, who are largely interested in the extensive placer workings of Blackfoot, Bear Gulch, and Pioneer, I have received very carefully prepared estimates of the products of these districts. These gentlemen have for many years been interested in this section, and their knowledge of the districts they represent is fully recognized in all parts of the county. Messrs. Clark & Larabie were purchasers of over \$100,000 in dust, which was mainly shipped East. The estimates they give have been corroborated by reports, so far as received,

from mine owners in these districts. An amount exceeding \$138,000 was deposited in the United States assay office at Helena.

GALLATIN COUNTY.

This county undoubtedly produced a larger amount in 1885 than in 1884, but in the absence of authentic information I do not feel warranted in fixing its production at quite that of the prior year.

JEFFERSON COUNTY.

This county presents official reports from the Helena Mining and Reduction Company at Wickes, and the Elkhorn Gold and Silver Mining Company.

The Gregory Consolidated Mining Company has had one recorded run producing \$180,000, and two others at considerable intervals. It is not believed by those competent to judge that the total product fell below \$300,000, of which amount I allow \$30,000 for lead. The gold dust and retort received at the United States assay office at Helena, added to that purchased by the Merchants' National Bank of Helena and shipped East, will doubtless cover the placer yield and product of small mills.

LEWIS AND CLARKE COUNTY.

This county is mainly indebted for the large increase in the gold and silver product to the Montana Company (limited), operating the Drum Lummon mine, and the Boston and Montana Gold Mining Company, operating the Gloster mine. Official reports from both companies have been received. The sums attributed to the Homestake mine and the Merchants' National Bank of Helena are also official. Out of \$315,872 gold dust and gold retort deposited at the United States assay office here, \$138,141 appears in the report of the Montana Company (limited). The balance represents the placer yield from numerous workings and the product of smaller mines and mills.

MADISON COUNTY.

Messrs. Hall, Harrington & Co., and Henry Elling, bankers, of Virginia City, have both prepared for me careful estimates of the production of this county. The placer yield affords the larger proportion. This is, for the most part, confined to Alder Gulch at Virginia City. Inquiries made by me there in person of proprietors and superintendents discovered but trifling variations. Reports, however, received from more distant points increased somewhat their figures. Of the total production, \$142,297 were deposited at the United States assay office of this place.

MEAGHER COUNTY.

Official reports have come to me from the Maginnis Mining Company, Merchants' National Bank, Helena, and the Toston smelter. The sum of \$85,517 was received at this office, of which \$25,577 is credited to the Maginnis Mining Company. Reports have reached me but from few

points out of the very many in the county, and I am unable to present other figures than these. Doubtless, the aggregate should be considerably increased, possibly by from \$50,000 to \$75,000.

MISSOULA COUNTY.

This county has no well-known and recognized mining centre. Excluding the amount actually received at this office, and failing to receive any response to inquiries, I am compelled to accept the estimates of residents of the county at the lowest sum.

SILVER BOW COUNTY.

I have received full statements of the several products of the following mines and mills, from the owners or superintendents of same, viz: Alice, Lexington, Moulton, Bell, Parrott, Anaconda, Clark's Colusa, Colorado Smelting and Mining Company, Old Lexington, Dexter, and Silver Bow mills.

The silver credited to the Montana Copper Company and Clark's Colusa is based upon the gross receipts of \$750,000 for the former and \$960,000 for the latter.

I have deemed it best to supplement the above by the following extract from the Butte Miner of January 1, 1886:

The output of Butte for 1885 has been as follows:

Anaconda mine, copper	\$3,560,000
Other copper ores shipped east	3,048,000
Matte and tailings, copper	2,000,000
Silver ore shipped east	750,000
Bullion per express	6,000,000
Total	15,358,000

These figures are derived from the actual shipments. There were shipped from Butte, during 1885, 218,111 tons of copper ore, 12,455 tons of matte and tailings, and 523 tons of silver ore. The Pacific Express has carried out of the camp, for the year, 375,000 pounds of bullion—gold and silver.

A severe crisis occurred in the affairs of Butte which almost resulted in closing down the largest mines. The lower levels developed quantities of ore of low grade.

The salt used in chloridizing was furnished by the railroad company, being brought from Salt Lake at the exorbitant price of \$25 per ton, while coal was brought almost twice the distance for \$6 per ton.

The different smelting companies combined and protested to the railroad company that unless the price was reduced all of the mines would close down. A compromise was finally effected and the price was reduced to \$15 per ton.

At the date of this writing the brakemen on the Utah Northern Railroad are on a strike. One of the results is the stopping of the ore trains furnishing the Anaconda smelter with ore from the mine at Butte. In consequence work on both the mine and smelter of the Anaconda Company is stopped and 1,200 employes are thrown out of employment. This will be a serious set-back to the mining industry of Montana.

PRODUCTION OF MONTANA, 1885.

	Gold.	Silver at \$1.03 per ounce, fine.	Silver at coining rate.
<i>Beaverhead County.</i>			
Hecla Consolidated Mining Company	\$14,739 02	\$707,451 26	\$888,024 00
Dillon National Bank	14,000 00		
Argenta district		59,000 00	74,059 00
Bannock district	30,000 00	91,000 00	114,227 00
Bald Mountain district		51,000 00	64,017 00
Red Rock		25,000 00	31,380 00
Chinamen	8,000 00		
Total	66,739 02	933,451 26	1,171,707 00
<i>Choteau County.</i>			
United States assay office, Helena	23,502 04		
Chinamen and others	3,500 00		
Total	27,002 04		
<i>Deer Lodge County.</i>			
Granite Mountain Mining Company	12,000 00	1,137,681 90	1,428,066 00
Hope Mining Company		133,000 00	166,948 00
Cable Mining Company	250,000 00		
Penobscot mine	35,000 00		
Bald Butte mine	23,802 64		
Blue Eyed Nellie mine		25,000 00	31,380 00
Merchants' National Bank, Helena, purchased and shipped East	55,000 00		
J. D. Armstrong	6,000 00		
Blackfoot:			
Opir Gulch and Bar	73,000 00		
Carpenter Gulch and Bar			
Snowshoe Gulch			
Ohio Gulch			
Three-Mile Gulch			
Washington Gulch			
Lincoln Gulch			
McClellan Gulch			
American Gulch			
Jefferson Gulch			
Nevada Creek			
Chinamen from same	15,000 00		
Beartown:			
Elk Creek and tributaries	52,000 00		
Bear Gulch	53,000 00		
Chinamen from same	21,000 00		
Pioneer:			
Squaw Gulch Company	7,662 57		
Kelly & Irvine	8,661 49		
Other parties	25,000 00		
Chinamen	15,000 00		
Cotter, Hickey & Tierney	13,581 93		
Total	665,708 63	1,295,681 90	1,626,394 00

PRODUCTION OF MONTANA, 1885—Continued.

	Gold.	Silver at \$1.03 per ounce, fine.	Silver at coining rate.
<i>Gallatin County.</i>			
United States assay office, Helena.....	\$6, 193 08	.....	.....
Emigrant Gulch	9, 000 00	.....	.....
Bear Gulch	6, 500 00	.....	.....
Crevice Gulch.....	4, 000 00	.....	.....
Other gulches, Chinamen, and quartz mines	10, 000 00	.....	.....
Total	35, 693 08	.....	.....
<i>Jefferson County.</i>			
United States assay office, Helena.....	76, 653 89	.....	.....
Helena Mining and Reduction Company, less pro- duct Maginnis Mining Company	76, 172 09	\$631, 430 10	\$792, 599 00
Elkhorn Gold and Silver Mining Company	1, 338 60	174, 331 25	218, 828 00
Gregory Consolidated Mining Company.....	15, 000 00	255, 000 00	320, 086 00
Merchants' National Bank, Helena, purchased and shipped East.....	45, 000 00	.....	.....
Basin district.....	4, 000 00	.....	.....
Ore shipped East .....	.....	25, 000 00	31, 380 00
Chinamen	16, 000 00	.....	.....
Total	234, 164 58	1, 085, 761 35	1, 362, 893 00
<i>Lewis and Clarke County.</i>			
United States assay office, Helena (loss Drumlum- mon product received).....	177, 731 33	.....	.....
Montana Company, limited (Drumlummon mine) 65 per cent. gold	581, 236 50	312, 973 50	392, 858 00
Boston and Montana Gold Mining Company (Glos- ter mine), 80 per cent. gold	489, 992 54	122, 498 14	153, 764 50
Homestake mine.....	81, 000 00	.....	.....
Merchant's National Bank, Helena, purchased and shipped East.....	65, 000 00	.....	.....
Eslor's Concentrator and Chinamen.....	23, 000 00	8, 000 00	10, 041 96
Total	1, 417, 960 37	443, 471 64	556, 664 56
<i>Madison County.</i>			
Pony mines.....	10, 000 00	25, 000 00	31, 380 00
Sheridan and vicinity.....	5, 000 00	15, 000 00	18, 829 00
Red Bluff.....	20, 000 00	.....	.....
Iron Rod and Silver Star	20, 000 00	.....	.....
Alder Gulch:			
Eagle Hill	1, 000 00	.....	.....
A. C. Hunt & Bro	5, 000 00	.....	.....
Henry Elling	15, 000 00	.....	.....
Highland Flume Co.....	25, 000 00	.....	.....
N. Pashley.....	15, 000 00	.....	.....
Hays & Sterns.....	3, 500 00	.....	.....
Alder Gulch Consolidated Mining Company....	25, 000 00	.....	.....
L. A. Fenner	7, 500 00	.....	.....
Dunean, Walsh & Co	7, 500 00	.....	.....
Deyermont & Jones	7, 500 00	.....	.....

PRODUCTION OF MONTANA, 1885—Continued.

	Gold.	Silver at \$1.03 per ounce, fine.	Silver at coining rate.
<i>Madison County—Continued.</i>			
<i>Alder Gulch—Continued.</i>			
German Bar Flume Company	\$10,000 00	-----	-----
Montana Flume Company	10,000 00	-----	-----
Brown's Gulch and tributaries	6,000 00	-----	-----
Bar diggings	2,500 00	-----	-----
Chinamen from above	50,000 00	-----	-----
Bivens, Harris, and California Gulches	25,000 00	-----	-----
Total	270,500 00	\$40,000 00	\$50,209 00
<i>Meagher County.*</i>			
United States assay office, Helena, less product			
Maginnis Mining Company	59,823 97	113 98	142 00
Maginnis Mining Company, received at United			
States assay office, Helena	25,577 78	-----	-----
Maginnis Mining Company, sent to reduction works			
at Wickes	114,422 22	10,000 00	12,552 00
Merchants' National Bank, Helena, purchased and			
shipped East	135,000 00	-----	-----
Tosten smelter	-----	8,000 00	10,042 00
Silver ore and gold shipped East	15,000 00	20,000 00	25,105 00
Chinamen	25,000 00	-----	-----
Total	374,823 97	38,113 98	47,841 00
<i>Missoula County.</i>			
United States assay office, Helena	745 88	-----	-----
Barnard Placers	6,000 00	-----	-----
J. B. Gold Mining Company	12,000 00	-----	-----
Other gulches and Chinamen	12,000 00	-----	-----
Total	30,745 88	-----	-----
<i>Silver Bow County.</i>			
Alice Gold and Silver Mining Company	-----	949,443 04	1,191,782 00
Lexington Mining Company	111,421 20	586,030 20	735,610 00
Moulton Mining Company	44,630 49	627,741 45	787,967 00
Bell Mining Company	-----	92,400 00	115,985 00
Old Lexington mill	-----	51,793 58	65,014 00
Colorado Smelting and Mining Company	59,286 82	580,912 50	729,186 00
Parrott Silver and Copper Company, 4,935.15 tons			
copper, at \$60 Ag per ton	-----	296,109 00	371,689 00
Anaconda, 30,995 tons copper, average assay, 21.82			
ounce, Ag	-----	710,126 45	891,381 00
Montana Copper Company	-----	150,000 00	188,287 00
Clark's Colusa	-----	130,000 00	163,181 00
Silver Bow Mill	-----	385,000 00	483,268 00
Dexter Mill	-----	25,000 00	31,380 00
United States assay office, Helena	15,724 15	947 35	1,189 00
Placers	55,000 00	-----	-----
Silver ore shipped East	-----	750,000 00	941,432 00
Total	286,062 66	5,335,503 57	6,697,351 00

* Includes the new county of Fergus.

RECAPITULATION.

Counties.	Gold.	Silver.		Total gold and silver at coining rate.
		Commercial rate (\$1.03).	Coining rate.	
Beaverhead	\$66,739	\$933,451	\$1,171,707	\$1,238,446
Choteau	27,002	-----	-----	27,002
Deer Lodge	665,709	1,295,682	1,626,394	2,292,103
Gallatin	35,693	-----	-----	35,693
Jefferson	234,164	1,085,761	1,362,893	1,597,057
Lewis and Clarke	1,417,960	443,472	556,664	1,974,624
Madison	270,500	40,000	50,209	320,709
Meagher	374,824	38,114	47,841	422,665
Missoula	30,746	-----	-----	30,746
Silver Bar	286,063	5,335,503	6,697,351	6,983,414
	3,409,400	9,171,983	11,513,059	14,922,459

CHAPTER VII.

NEVADA.

By WILLIAM GARRARD,

Superintendent United States Mint, Carson City, Nev.

The mining interests of this state during the past year have been in a very depressed condition. The great reduction in the value of silver bullion is no doubt the main cause of this depression. The closing of the mint at Carson, by depriving the producers of this state of a home market and of means for the ready conversion of bullion into coin, has had its effect in adding to the depression, especially in the western part of the state.

These causes have not only reduced the production of silver, but also of gold. It is not generally understood that in Nevada the production of gold is dependent to a very large extent—I might say almost entirely—on the production of silver. There are very few mines in this state that are worked exclusively for gold. In most instances the gold and silver occur together in the same ore, hence any cause that acts injuriously on the production of the one equally affects the other. For instance, the yield of the Comstock lode for 1885 shows \$1,906,158.65 in gold and \$2,150,910.59 in silver.

Of the bullion deposited in the mint at Carson for the few months it was in operation in 1885, \$759,652.30 was gold and \$447,797.80 was silver.

Owing to the introduction of concentrators in working Comstock ores it may be reasonably anticipated that the year 1886 will show a greater yield of gold than silver.

There are available two chief sources from which to estimate the production of gold and silver in Nevada. The one is the report of Wells, Fargo & Co., wherein the movement of the two metals is reported separately. The other is the quarterly reports made to the county assessors by the superintendents of the mines, as required by law, for the purpose of taxation. The latter do not distinguish between gold and silver.

With a view to the verification of these reports, and especially in order to establish the relative amount of the gold and silver product of each county, as reported by the assessors, I addressed a printed circu-

lar to the superintendents of nearly all the producing mines in the state, asking, among other things, statements of their output of bullion for the year 1885, and the value of the same.

Not half of those addressed responded, yet enough answered to enable me to form a fair estimate as to the relative amount of gold and silver produced by each county, as shown by the assessor's reports. These answers have also enabled me to form an approximate estimate of so much of the production as was not reported to the assessors.

Wells, Fargo & Co. report the production of gold and silver in Nevada for the year 1885 as follows:

PRODUCT OF NEVADA FOR 1885.

ESTIMATED BY JOHN J. VALENTINE.

[Silver reckoned presumably at commercial value.]

Gold dust and bullion by express	\$1, 253, 355
Silver bullion by express	6, 575, 430
Ores and base bullion by freight	1, 384, 336
Total	9, 213, 121

The production of gold and silver for the year 1885 in the state of Nevada, shown by the reports of the county assessors to the state comptroller, by counties, is as follows:

PRODUCTION OF GOLD AND SILVER IN NEVADA, 1885.

REPORTED TO THE STATE COMPTROLLER.

[Silver presumably at market value.]

Counties.	Number of tons worked.	Value in gold and silver.
Churchill	1, 146	\$42, 380 00
Douglas		
Elko	5, 717	311, 594 22
Esmeralda	46, 161	762, 141 65
Eureka	50, 248	1, 212, 090 97
Humboldt	13, 904	253, 512 12
Lander	2, 002	499, 799 61
Lincoln	2, 719	73, 920 53
Lyon	56, 396	177, 134 28
Nye	212	21, 581 64
Ormsby		
Storey	238, 942	2, 952, 499 38
Washoe		
White Pine	15, 707	330, 126 76
Total	433, 154	6, 636, 781 16

My estimate, based upon the above reports, upon the answers of many mining superintendents, upon deposits at the mint not otherwise accounted for, and from the best available information from all sources, is as follows:

PRODUCTION OF NEVADA FOR 1885.

ESTIMATED BY WILLIAM GARRARD, SUPERINTENDENT OF UNITED STATES MINT AT CARSON.

Counties.	Gold.	Silver.	Total.
Churchill	\$400	\$72, 000	\$72, 400
Douglas.....	12, 000	1, 000	13, 000
Elko	16, 000	472, 000	488, 000
Esmeralda	150, 000	853, 000	1, 003, 000
Eureka.....	600, 000	1, 000, 000	1, 600, 000
Humboldt.....	80, 000	250, 000	330, 000
Lander.....		770, 511	770, 511
Lincoln	20, 000	180, 000	200, 000
Lyon.....	84, 300	168, 600	252, 900
Nye.....	400	30, 000	30, 400
Storey	1, 915, 700	2, 131, 400	4, 047, 100
Washoe	5, 000	800	5, 800
White Pine	200, 000	300, 000	500, 000
Total.....	3, 083, 800	6, 229, 311	9, 313, 111

The above estimate can be offered only as an approximation and is more likely to be below rather than above the actual product.

By comparing the foregoing estimate of Wells, Fargo & Co. with that of 1884 it is shown that the production of 1885 exceeded that of the previous year \$324,202.

A comparison of the assessors' reports for the two years shows a gain for 1885 of \$45,106.39. As compared with the estimate given in Director Burchard's report on the production of the precious metals for 1884 a gain of \$213,111 is shown for 1885.

Had silver remained of the same value as the average of last year there can be but little doubt that this estimate would have been increased by some two millions. The depreciation of silver has had the effect of turning the attention of prospectors to the discovery of gold mines more than in former years. While a few new gold mines have been discovered, some of which are in process of successful development, the fact has been more fully established than ever that our production of gold is almost exclusively incidental to the production of silver and dependent on silver mining.

During the year under consideration there have been no important discoveries of new mining districts, nor any striking developments in the old mining camps. Nor has there been any marked improvement either in mills or other means of reduction. This year, however, shows a remarkable change in the manner of handling low-grade Comstock

ores by the introduction of concentrators. In most of the mills on the Carson river, where nearly a thousand tons of ore are crushed daily, concentrators have been introduced. These concentrators are of different kinds.

The "Golden Gate," the "Triumph," and the "Frue" are now in successful operation. They are all constructed by application of the physical law and action of the specific gravity of the pulverized miscellaneous material under treatment. They have been introduced at so late a date that results in but few instances have been reached. Yet all the superintendents with whom I have conversed are sanguine of greatly reducing the cost of milling certain classes of ore. For chloride ores, however, these concentrators are all admitted to be worthless.

Where ores contain gold, either alone or in association with silver in the form of sulphurets, all of the concentrators in use work a great saving in the cost of reduction. For instance, in one mill each concentrator handles 30 tons of ore directly from the battery in twenty-four hours, and concentrates 150 tons into a single ton. Of course the proportion of sulphurets in this ore to the whole mass is very limited, amounting perhaps to not over one-half of 1 per cent. Some gold mines in California carry 10 per cent., and more, of sulphurets, hence not more than 10 tons could possibly be concentrated into one. The great advantage accruing to the mill above referred to is in the reduction of labor. Instead of running 150 tons through the pans but 1 ton has to be ground and amalgamated; the loss of quicksilver is reduced to a minimum; the shoveling of the pulp from the tanks (the hardest of all work about a mill); the charging of the pans; the grinding, and the discharging of the pans and settlers are, by this new process, all done away with, while the saving in wear and tear of shoes and dies, and in outlay for renewals of plant, will be very great.

A new enterprise under the control of a Boston company has lately attracted much general interest. I refer to the attempt to recover from the bottom of Carson river the rich tailings, amalgams, and quicksilver that have been washed into that stream for the past twenty-seven years. A large proportion of the milled ores from the "Comstock" have gone into the river in this form. The company's machinery not yet having arrived, it cannot be described. It remains, therefore, to be seen whether any process yet invented is equal to the probable recovery of the precious metals from the immense accumulation of rich refuse at the bottom of the Carson river.

I should not omit to mention that a new mill for crushing ore has been introduced, and is in successful operation in at least two mining districts in this state. I refer to the so-called "roller pan." Where the intention is to concentrate the ores for shipment it is claimed to be found cheaper than the battery and to have the advantage of making less slime. Many gold mines in California have adopted this mill in

preference to the stampmill, and use it for both grinding and amalgamation.

What is greatly needed in Nevada is the erection of reduction works, capable of handling all classes of ores, at some point convenient to railroad transportation. At present much of the ore and concentrates for want of such works is shipped to Salt Lake City, Argo, Colorado, and the Selby works in California. The cost of transportation to these distant points reduces the profit of the miner, and in many instances prevents him from profitably working his mine when a home market would afford a small profit.

CHAPTER VIII.

NEW MEXICO.

By WALTER C. HADLEY.

Next in importance to the fact that the gross output of the precious metals from New Mexico in 1885 was 16 per cent. larger than that of 1884 appears the rapid increase in gold production. The figures show that two and one-half times as much gold was mined in 1885 as in the year previous. This is due to the revival of industry in certain gold districts of Grant, Socorro, Colfax, and Sierra counties, as well as to entirely new discoveries of gold in the same counties. During that portion of 1886 which has already elapsed there has been a further increase, and Santa Fé county may be expected to rank, in a very short time, next to the counties above-named, and possibly to equal some one of them. It seems probable that in the future, New Mexico will become more widely known by her gold mines than by her silver mines, although there is no reason to believe that the latter can be exhausted. The proof is positive that as depth is gained upon the fissure-veins the quality and quantity of metal does not lower, and no case of "digging out" of a mine in limestone has thus far come to my notice.

Kingston, Silver City, and Socorro have been the centres of attraction for mining men during the year, and large amounts of money are being invested steadily in the mines tributary to those points.

Lincoln county, it is expected, will begin to produce gold ores rapidly when the railroad now building from El Paso shall have been completed.

During 1886 may be expected the most active operations in prospecting and mining in the Black Range, and in the extreme western portions of the counties of Socorro and Grant.

New Mexico would have been far ahead of her present status in the production of precious metals, it may be believed, had she received her first impetus in the industry at any other time than that in which she did, viz: the era in which a general disgust pervaded the public mind because of the collapsing of fraudulent schemes during the bonanza days of Leadville. While this territory has suffered from the general depression following that fever of excitement, growth and development may be expected to follow from the fact that capital is again seeking investment here.

I place the production of precious metals in the territory for 1885 at \$806,500 gold, \$3,023,500 silver; total, \$3,830,000, divided as follows:

Counties.	Gold.	Silver.	Total.
Bernalillo	\$9,500	\$500	\$10,000
Colfax	195,000	45,000	240,000
Doña Aña	8,000	12,000	20,000
Grant	259,000	1,125,000	1,384,000
Lincoln	55,000	3,000	58,000
Santa Fé	12,000	13,000	25,000
Sierra	118,000	1,175,000	1,293,000
Socorro	150,000	650,000	800,000
Total	806,500	3,023,500	3,830,000

It will be observed that whereas Socorro county is credited with only \$800,000 ore production above, the bullion output was \$1,661,544.76, as given by the returns from smelters at Socorro, the difference being due to ores brought there from other parts for treatment.

BERNALILLO COUNTY.

The most active mining work done here during 1885 was that in the copper mines at Copper City, north of Albuquerque, the ores of which carry only traces of the precious metals. In Hell Cañon district, east of Albuquerque, two gold mines, the Star and Milagres, have been worked in a small way, their ores being treated in a stamp-mill at that place. The estimated output was \$9,500 in gold bullion and \$500 silver.

COLFAX COUNTY.

No portion of the territory can claim a more rapid advance in point of production of precious metals during the year 1885 than Colfax county. It is remarkable, too, that less is heard about its mines than those of any other district. The estimated output in 1884 was \$50,000, while for the past year the output is figured at \$240,000. This value was largely taken from the placers, although there are 50 stamps in the Ute Creek and Elizabethtown districts, and the total capacity of all ore works is 100 tons per day. Prospecting continues with energy. Ore was shipped from 23 mines; assessment work done on 100; 260 miners are employed; the Montezuma mine produced the most value. Seven-dollar ore from the Measures mine is worked to a profit. The other mines producing profitably were the Aztec, Black Horse, Bull-of-the-woods, American Flag, and Homestake.

DOÑA AÑA COUNTY.

Active mining work was prosecuted only in the Organ and Jarrilla mining districts of this county during 1885. Assessment work was done on about 100 claims. Ore was shipped from 10. The output is

estimated at \$20,000. Prospecting is now more active than at any previous time in the history of the mining industry in the county. The Bennett, Dallas, Tom Paine, Little Buck, Stephanson, Galloway, Memphis, Grey Eagle, and Silver Gem were worked profitably during the year.

The deepest shaft in Organ district is at the Memphis mine, which is in a body of copper and silver ore of too low a grade for shipment. This shaft is 175 feet deep.

The Galloway has been prospected to a depth of 135 feet, always producing high grade ore, but not in sufficient quantity to make the mine profitable. At that depth a body of pay mineral has been discovered and the mine is being put into shape to make it producing.

The Little Buck has yielded \$30,000, one car-load shipment netting \$12,000. The deepest shaft upon the property is 80 feet. Ore has been mined profitably at different points on this ledge for 2,000 feet.

The Tom Paine mine has been leased to parties who are working, at five different points, the entire length of the property, upon the surface. The ore produced runs about 100 ounces in silver.

The Dallas mine at one point produces lead carbonates running well in silver. At another a face of solid galena has been uncovered running high in silver.

The camp is strictly without capital, being entirely dependent upon the output of the mines to support about thirty prospectors.

The Jarrilla mining district, which is adjacent to Organ, has been developed to some extent during the past year. Three mines have been patented, and the camp only awaits the arrival of a projected railroad to place the large deposits of copper ore on a paying basis.

At Las Cruces a smelter was erected in the fall of 1885 for the purpose of reducing the ores from the Organ mountains. It consisted of a copper and galena-silver stock, each of ten tons capacity. Owing to litigation the works have never been put in operation, but are all completed. It is expected that matters will be settled and the smelter soon blow in.

The nearest railroad point to Organ is Las Cruces, 16 miles distant. The ores must be brought for shipment in wagons, and then sent by rail to the nearest smelter, which is at Socorro, N. Mex., or to Pueblo, Colo. The expenses incurred make a number of mines unprofitable which will be counted in the list of producing mines as soon as smelting facilities are obtained.

GRANT COUNTY.

Within the lines of Grant county there has always been more mining carried on than in any other part of New Mexico. Indeed, a reference to the past records shows that prior to the date when Sierra county was made of a portion of Grant, the latter had preserved the distinction of producing more gold and silver than all other parts of New Mexico combined. In 1885 Grant county did not fall behind her standard; never-

theless she recognizes a promising rival in Sierra. Silver City is yet regarded as the principal mining centre of New Mexico, and that it will continue to be such is indicated by the fact that capitalists are there establishing reduction works of various kinds, and the miner and prospector find already a competing market for their ores.

During the year the Flagler Reduction Works were placed in successful operation, treating ores by the Russell process, as particularly described in the article on Sierra County concerning the Sierra Grande Company's new mill. The Silver City Concentrating Works are now prepared to buy concentrating ore, and have all the work they can do. They are supplied with stamps, Frue vanners and Hooker concentrator. A new concentrating plant with steam stamps and Rouse tables has been erected upon the properties managed by W. H. Newcomb, on Legal Tender Hill, within the city limits. The Bremen mill has been entirely overhauled and much improved for the work of handling, by amalgamation and concentration, the ores from Bremen's famous '76 mine. A custom smelter is also projected at Silver City.

A large and easily traced limestone and slate or quartzite contact, in which silver is traced at all points where exposed to view, and at many points where this contact has been mined upon, extends from the town of Silver City to the valley of the Mangus. Large and paying bodies of ore have been found upon it. Such is the case on Legal Tender Hill, upon the Sherman and adjoining mines, the Thayer-Crowley, the Kirby, Childer's, Burro, Income, Twin Sisters, Penrose-Bonanza, and Old Man mines. In other mines of the same belt the ore-bodies go out into the limestone entirely or into the slate—the Bremen, Providencia, Emma, Hidden Treasure, for examples.

In the same belt there are also a few fissure veins in the syenite that lies under the limestone above referred to, which show extremely rich ore, but which have not received the attention they merit. The Black Prince and Pauline are examples. Whenever metal is found in this contact or in the veins following it a rhyolite is readily discovered in close proximity. No perpendicular contacts between limestone and porphyry have yet been opened up, showing silver or gold in paying quantities. Yet there can be little doubt that such exist, and this is made all the more probable by reason of the important discoveries made late in 1885 upon Walnut Creek, at a point about 12 miles northwest of Silver City, in the Peerless mine. This is a generous vein, almost perpendicular, with limestone for the hanging and porphyry for the foot wall. The owners of this property netted \$2,000 from the first car-load of ore shipped, and the value of succeeding car-loads increased steadily, while the vein continues in strength. This property has recently been bonded for \$250,000. Other locations upon the same contact vein have been made, and in nearly all of them good ore was exposed.

The new town that has sprung up is known as Stewartville.

Bullard's Peak district, also widely known by the name of Black Hawk, claims the deepest mine in the territory, that of the Solid Silver Mining Company. Good ore is being extracted at a depth of 700 feet from surface. The veins of this district are chiefly true fissures in syenite, and are crossed by porphyry dykes, from which they appear to have been enriched in silver. A noticeable fact is that in some of the workings silver is found on one side only of the influential crossing. In one or two instances the course of the porphyry dykes is parallel with the course of the veins. The Rose mine, purchased by a stock company early in 1885, was developed rapidly, and has taken rank alongside the Black Hawk mine of the Solid Silver company as a producer. Machinery has been placed upon the main shaft.

Native silver in rare shapes is frequently found in these veins. Large quantities of nickel and cobalt are also found. There has been a very general improvement in the prospects of the Burro Mountains, and many other claims besides those mentioned above are looking well.

The Old Man mine at Fleming was worked continuously throughout the year. A great deal of development work was done. A tunnel was cut through the mountain connecting the east and west workings on the vein. Hoisting works were erected and about \$75,000 in high-grade ore was shipped.

The average value of ore shipped was \$306 per ton. The large accumulation of low-grade ore upon the dumps has induced the owners to take steps to erect a mill at the mine, there being an abundance of water available. High-grade ores were shipped from a few other claims in this camp, including the Charlie Ross, "49," and Treasury Mountain Company's mines.

In Pinos Altos district the mining industry has experienced a notable revival during the past year. The placers have supported a large number of natives for many years, and about twenty years ago the quartz veins were worked to advantage to shallow depths only. Powder could not be afforded, and as the veins could not be worked with pick and gad for more than 50 feet in depth, the mining work ceased.

Of late years the supposition became general that the work was abandoned because of the worthlessness of the gold ledges. Only during the past few months have general reopening of the old shafts and new prospecting been vigorously undertaken. The results have been satisfactory. It has been further demonstrated that the so-called refractory, base ores found at greater depths are not only readily milled and concentrated, but their gold value has thus far proved almost double the value of the oxidized surface ores.

Three gold mills and one arrastra (steam) are in constant operation. Pinos Altos is 7 miles north of Silver City and has come to be a steady gold-producing camp.

Georgetown district, long among the most important of ore-producing camps, has maintained its reputation during 1885. The output was

about \$30,000 per month, and with regularity. Payne, Washington & Co. have conducted new enterprises during the year that were of especial interest. This firm is operating the McGregor and other mines and running a five-stamp amalgamating mill with success. The former owners confined themselves to the slate and limestone contact, but the present superintendent, a miner of large experience, advised sinking into the limestone. At a depth of 30 feet a porphyry contact was found similar to that running through the Naiad Queen, and a fine body of high-grade mineral has been taken out of it. The company itself is working about thirty men, and has sixty leasers in the older portion of the mine. The firm is running the mill on the ore taken out by leasers and piling its own for working in the future. Three amalgamating pans and a settler have been put in with excellent results, working up to more than 95 per cent. of the assay value.

The Commercial mine has been producing steadily, and ships about as formerly of high-grade ore.

Captain Trerise has given up his lease on the Satisfaction, belonging to the Mimbres Mining Company, but not until he had a mine of his own opened adjoining, from which he is taking out a good quantity of pay ore.

The Glamorgan, working on lease, has not been doing so well for a few weeks past as previously.

The Mimbres mill has handled the usual amount of ore.

Hanover Gulch district is producing more ore than for some time in the past. New capital has taken hold of one or two of the reputable mines here, which may be expected to produce during 1886.

High grade lead ores are being shipped regularly from the Cook's Peak district. Here, as in other parts of Grant county, there have been exposed during the year large bodies of ore.

In Gold Gulch district some profitable work was done, and a larger amount of development work. The durable character of the class of veins there found is established with a reasonable degree of certainty.

The Young Man mine at Malone is being worked regularly. Gold ores that were rich enough to warrant shipment were mined in various parts of the district.

In Telegraph district the property of the Gila River and Telegraph Mountain Mining Company was purchased during the year by Chicago parties and a new mill is now being erected. Water-power will be used.

The Steeple Rock mining district is chiefly known by the Carlisle mine. It has, however, a great number of large ledges of low-grade gold and silver ores, running from \$6 to \$15 per ton. They are free at the surface, but base as depth is attained; containing zinc, iron, lead, and copper with sulphur. The Carlisle mine is a mammoth vein in width. Eight-dollar ore is worked to profit at the twenty-stamp mill of the company. Extravagant methods are reputed to have caused the

company to run behind during the early part of 1885, but it is now under more conservative management.

The Carlisle mine shipped \$107,920 in gold and silver bullion and \$25,047 in base bullion and \$45,333 in concentrates in 1885.

Only about \$5,000 of the bullion value was in silver, the remainder in gold.

The concentrates ran three-fourths gold, one-fourth silver.

The Norman, Rain-in-the-Face, Pilgrim, and National Bank have proved to be good properties. A fine stamp-mill is now being erected on the Rain-in-the-Face.

The Apache mining district is situated about ten miles north from the boundary line of Mexico, forty-five from Deming, and is thirty miles south of the Southern Pacific Railroad. The station of Separ is the nearest railroad point. The district is comparatively new, it having been opened in the latter part of 1885. It is situated in what is known as the Apache range, where for some twenty miles numerous buttes, extensions of the Victoria range, rise from the prairie. The mineral consists largely of hard and soft carbonate of lead, chloride and native silver with copper intermixed, running rich in silver.

The main lode cuts the country for over twenty miles, striking northeast and southwest. It averages over forty feet in width, and is a contact vein lying between a porphyritic hanging-wall and limestone foot-wall. The vein matter is black and white crystalline quartz under ochreous capping or gossan.

This gangue is mineralized with ore, rich in lead and silver, carrying from twenty to sixty per cent. lead, and from forty to four thousand ounces silver to the ton.

Victoria district is widely known through the extensive mining done on the Chance and Victoria properties here, and their production of silver-lead.

The statistics furnished, however, from this as well as Eureka, Pyramid, Shakspeare, Monument, and Tres Hermanos districts are incomplete.

LINCOLN COUNTY.

The two districts in this county in which any considerable amount of mining work was done during 1885 were White Oaks and Nogal, both of which are gold-producing. Having been familiar with the history of White Oaks camp since gold was first discovered there, I may say that the present lack of prosperity is not in my opinion due to any established facts detrimental to the value of the mineral veins there. The real cause may probably be found in the fact that the districts named are more than 100 miles from railroad, and that inexperienced parties, with large capital to support them, have from time to time expended large sums in ill-advised development work or mill-building. Sufficient money was consumed in erecting two mills, each upon untried theories,

to have built one sixty-stamp mill of the ordinary kind. At White Oaks the Homestake company has now in course of construction a good gold-mill.

The Homestake mine stood alone in 1885 as a shipper of ore or bullion from White Oaks, and the value of its production was about \$40,000 gold. Assessment work was done on about fifty claims. At present more prospecting is being done than heretofore, and if the Homestake mine and mill succeed in demonstrating that these veins are continuous and profitable, the district may expect better times. The Little Mac, Hannibal, Oro Cash, South Homestake, Henry Clay, and other mines in the district have been worked to considerable depths in the past. Excellent coal is found in abundance at White Oaks. The El Paso and White Oaks Railroad, prospected to this point, is now grading.

Nogal district is especially worthy of mention because of the work done in Dry Gulch during the year upon the American and Cross Cut mines. About \$10,000 in gold was shipped from them in the brief portion of 1885 that they were worked. The American was purchased for \$25,000, and will probably be worked with better facilities in the future. The Mohawk mine also produced some ore.

The silver ores of Lincoln county have not received much attention, owing to the fact that transportation to railroad was so very heavy. There are some free milling ores, but no silver mills. Excellent lead fluxing ores are found on the Bonito Creek, and as coal is also close at hand a smelter would probably prove a paying investment.

The output of the county is estimated at \$55,000 gold and \$3,000 silver.

SAN MIGUEL COUNTY.

Very little prospecting has been done in this county. Only small and unprofitable veins have been opened at all, and those were in the western or mountainous portion of the county. At Mineral Hill, west of Las Vegas 20 miles, in a contact between limestone and quartzite, a silver-bearing course has been opened at various points, but with poor results. That good paying mineral exists somewhere in this district is indicated by the fact that excellent specimens of float, mostly plumbiferous in character, have been brought in from the cañons in the neighborhood of Hermit's Peak. Although San Miguel is the most populous of all the counties of New Mexico, no earnest attempts have ever been made to develop the mineral resources there, although her people have taken interest in the mines of other parts.

SANTA FÉ COUNTY.

Very little progress in mining was made in this county during 1885. The last report of the Director of the Mint (for 1884) fairly represents the condition of the industry at the present time, with the additional

statement that very recently a company with capital, directed by Col. R. W. Webb, has leased and bonded certain of the gold veins in the New Placers, and have put the mills in active operation. It is well-known that large sums have been realized in placer mining here in the past. From 1840 to 1860 work was constantly in progress, and at intervals during that period there was great activity in these workings.

Litigation over the title to mineral lands claimed by the San Pedro and Cañon del Agua company has been exceedingly detrimental to the adjacent and neighboring mining camps, even where there is not any shadow upon them.

The long-expected operations of the Ortiz grant owners have not yet been inaugurated. The old placers, it is believed, yet contain vast amounts of gold.

The output of Santa Fé County for the year is estimated at \$25,000.

SIERRA COUNTY.

Mining enterprises in this county during 1885 attracted attention from the outside world. The developments in Kingston and adjacent camp were accompanied with success. Better ore bodies were found in the older mines and new and important discoveries were made. The Illinois, Superior, Brush Heap, Gray Horse, Black Colt, Caledonia, Iron Clad, Monaska, Forest King, and many others produced shipping silver ore in paying quantities. More ore was shipped from this district in wagon trains than from any other district of its size in New Mexico. Among the important strikes may be mentioned the ore bodies opened up in the Lady Franklin, a mine located near the earlier locations, the Bullion, Superior, and Iron King. The extraordinary resources of this property were not fully demonstrated until late in the year. For several months its owners cleared about \$100,000 net profit, with an expenditure not exceeding \$15,000 per month. During the present year this rate of output has been well sustained. The ore bodies are found in limestone, with porphyry near them.

On the North Percha, about 9 miles from Kingston, fine bodies of ruby silver ore were developed in the Keystone and Templar mines in December, 1885. They are now producing shipping ore in moderate quantities, and the vein gives evidence of being a true fissure, in which ore bodies of value are expected. Those who look with distrust upon limestone formations as containing pockets of ore may here observe mines of quite a different character. Their ores in appearance and occurrence resemble the ores of Clear Creek county, Colorado.

On the South Percha, 6 miles from Kingston, continued development has added value to the mines, and new discoveries are reported.

Very little work was done upon the gold properties in the Hillsborough district, save that upon the Snake mine, the ore from which was worked in the mill belonging to the owners.

The Lake Valley district, which means simply the property of the Sierra Grande Mining company, deserves mention not only on account of the large ore output of the mines during the year, but from the fact that remarkable progress was made in the way of treating low-grade silver ores by lixiviation. The plant which has been erected is one of the largest in the world, but, owing to poor construction and faulty plans, the machinery in use had not, up to June 1, 1886, been fitted to handle more than one-half of the tonnage required and guaranteed by the builders. With an increase in capacity and changes in the methods of handling flue-dust, it is believed that the mill will prove a success.

Hermosa district turned out about \$100,000, of which one-tenth at least was gold. The placers about Las Animas Peak are reported to be rich, and to deserve attention. Apache district, or, as it is better known, Chloride district, has lately experienced a revival of mining interests, due to the erection of a lixiviation plant to treat ores by the Russell process. A large trial run of these ores was made in the mill at Lake Valley, and good results obtained. Ores have been shipped from Chloride in the past from a few mines; and now that there is a prospect of a home market, added to the fact that the Silver Monument, owned by the builders of the mill, will be explored to greater depths, an increase in output and in number of good strikes may be hoped for.

The output of Sierra County for 1885 is estimated at \$1,175,000 silver and \$118,000 gold.

SOCORRO COUNTY.

There are 52 mining districts in this county, in all of which some work was done during 1885. It is estimated that assessment work was done on 3,500 claims and that 900 miners were employed in the industry. The output of silver bullion during the year was \$1,163,664.63, and gold \$100,057.61. The total output, including copper and lead values, was \$1,661,544.76. The smelting works of Gustav Billing at Socorro produced \$964,231.63 in silver, \$81,157.61 in gold, and \$372,112.52 in lead. The Kelly mine, of the same proprietor, was the largest producer. It is about 30 miles distant from the smelter, and is in the most advanced stage of development of all the mines of New Mexico. Its ores are low in silver, but high grade in lead, thus promoting the extensive smelting business which Mr. Billing has established at Socorro. There are two other smelters in the county, with an aggregate capacity of 390 tons per day. There are six concentrators and 35 stamps in the county, with capacity of 152 tons per day. The Graphic smelter at Socorro has recently entered the market, making a strong bid for ores. The Graphic mine, belonging to the same company, is said to have quite a fair prospect of as good fluxing ores as are exposed in the Kelly mine. Good coking coal is cheap and found at various points in the county. The value of the coal output is about \$40,000 a month.

The Merrit mine, in Socorro Mountain, 3 miles west of Socorro, was worked to profit.

In Cooney district, Mogollon Mountains, in the far western portion of the county, there have been earnest attempts at work, and some rich discoveries, notwithstanding the fact that during the entire summer the raiding Apaches made prospecting very hazardous, and that the army afforded little or no protection to travelers between Silver City, the outfitting point, and this district.

I have seen very fine specimens of gold quartz brought from the more remote portions of the district. As soon as the Indian outrages cease, prospecting will probably be resumed with vigor. There are many parts of Mogollon Mountains where the prospector has never made his way. Last summer two men managed to scale the rocky walls and cross deep cañons, and reached the heart of the mountains. They were gone two months, and returned bringing ledge specimens that were very rich in gold and silver.

At Cooney the Silver Hill Mining Company is increasing the capacity of its mill. During the year John A. Miller and associates, of the Peacock Mining Company, erected, at an expense of \$60,000, the most extensive concentrating plant that has ever been placed in this territory. Some high-grade silver ores are found in the mines belonging to these two companies. They are "peacock" in character, hence the name, and are all concentrated without difficulty.

The Sheridan mine, belonging to the company of that name, composed chiefly of Saint Louis parties, has recently gone into the hands of a company. The vein of free-milling gold ore is said to be 30 feet in breadth. A twenty-stamp mill is now building at the mine.

During the present month there has been a general "rush" of miners to the scene of new and exceedingly rich strikes of gold ore near the Sheridan.

In the following districts there was a very decided improvement shown by the year's work: Water Cañon, Wilcox, Saint Felicite, Oscura, Hansanburg, San Andreas, Iron Mountain, Ladrone, Ten-mile, Limitar, Palvadero, Gallinas, and Pleasanton.

CHAPTER IX.

OREGON.

By ISRAEL LAWTON.

Superintendent United States Mint, San Francisco, Cal.

As in the case of California, my estimate of the production of the precious metals in Oregon for the calendar year 1885 is based upon information and reports received from those interested in the mining industries of the state, as well as from those that are acquainted with the amount of the production of the various counties.

I have estimated the production to have been \$742,235 gold.

Baker county is the largest producer. Quartz mining is in an undeveloped state, yet the Gold Ridge and Conner Creek mines are large producers. New discoveries have been made that will, it is expected, prove as productive as the two mines above mentioned. Placer mining is engaged in extensively and successfully. The Rye Valley Placer Company have about 900 acres of mineral land. This they are putting in condition to develop. The property has been producing steadily since it was opened, but owing to the time consumed by the extensive preparations made to develop upon a larger scale the production for 1885 was not large.

The placer mines located at Weatherby have produced moderately well and have been in constant operation.

The Sumpter placer mines are producing fair amounts, and are expected to increase them in the near future.

Grant county is next in importance as a producer. Placer mining is the kind mostly carried on, to a large extent by Chinese from whom it is very difficult to secure any information as to the amount of their production. Quartz was prospected considerably during the year. At John Day Town several promising discoveries have been made, the production from which, however, has not been large, perhaps owing to the crude manner in which they are being worked. With good machinery there seems to be no reason why they should not become greater producers.

The quartz ledges at Prairie City are looking well. The ore assays from \$20 to \$75 per ton, and even with the simple machinery now in use the output from these mines is considerable. The mine-owners in this county express themselves as well satisfied with the result of their labor.

Josephine county contains at least one large producing hydraulic mine and some small placers; few quartz locations, however, are reported.

From the various other counties the reported production is from placer mines of small extent, worked just as they can secure sufficient water. Still there are several well-developed quartz locations in each of them, but at present they are non-producing.

REPORTED BULLION PRODUCTION OF MINES OF OREGON FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

Counties.	Gold.
Baker	\$248,043 93
Benton	25 50
Coos	810 00
Crook	10,000 00
Curry	33,006 40
Douglas	3,808 00
Grant	124,600 00
Jackson	7,120 00
Josephine	50,000 00
Union	3,821 98
	481,235 81

UNREPORTED BULLION PRODUCTION OF MINES OF OREGON FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

Mines.	County.	Gold.	Total.
Chinese	Baker	\$20,000	.....
Small mines	do	30,000	.....
Others	do	50,000	\$100,000
Unreported	Clatsop	1,500	1,500
Do	Coos	4,000	4,000
Do	Douglas	7,000	7,000
Chinese	Grant	25,000	.....
Others	do	45,000	70,000
Chinese	Jackson	20,000	.....
Others	do	30,000	50,000
Unreported	Josephine	20,000	20,000
Do	Umatilla	5,000	5,000
Do	Union	3,500	3,500
Total		261,000	261,000

BULLION PRODUCTION OF MINES OF OREGON FOR THE TWELVE MONTHS
ENDING JANUARY 1, 1886.

Counties.	Gold.		Total.
	Reported.	Unreported.	
Baker	\$248, 043 93	\$100, 000 00	\$348, 043 93
Benton	25 50	.....	25 50
Clatsop .....	.....	1, 500 00	1, 500 00
Coos	810 00	4, 000 00	4, 810 00
Crook	10, 000 00	.....	10, 000 00
Curry	33, 006 40	.....	33, 006 40
Douglas	3, 808 00	7, 000 00	10, 808 00
Grant	124, 600 00	70 000 00	194, 600 00
Jackson	7, 120 00	50, 000 00	57, 120 00
Josephine	50, 000 00	20, 000 00	70, 000 00
Umatilla .....	.....	5, 000 00	5, 000 00
Union	3, 821 98	3, 500 00	7, 321 98
	481. 235 81	261, 000 00	742, 235 81

STATEMENT OF WELLS, FARGO & CO.'S SHIPMENTS OF BULLION PRODUCTION
OF MINES FROM THE COUNTIES OF OREGON FOR THE TWELVE MONTHS
ENDING JANUARY 1, 1886.

Post-office.	County.	Gold.	Total.
Baker City	Baker	\$170, 592	.....
Weatherby	do	1, 022	\$171, 614
Coquille	Coos	125	125
Drains	Douglas	324	.....
Canyonville	do	1, 765	.....
Glendale	do	1, 341	.....
Myrtle Creek	do	511	.....
Riddles	do	3, 490	.....
Roseburgh	do	2, 504	9, 935
Alkali	Gilliam	965	965
Canyon City	Grant	29, 026	.....
Granite	do	264	.....
Prairie City	do	6, 451	35, 742
Ashland	Jackson	2, 533	.....
Jacksonville	do	72, 716	.....
Gold Hill	do	300	75, 549
Grant's Pass	Josephine	8, 498	.....
Wolf Creek	do	4, 771	13, 269
Cottage Grove	Lane	215	.....
Eugene City	do	320	535
Silverton	Marion	84	84
Heppener	Morrow	791	791
Portland	Multnomah	77, 428	77, 428
Pendleton	Umatilla	2, 562	.....
Umatilla	do	4, 960	7, 522
Island City	Union	215	.....
La Grande	do	603	.....
Union	do	1, 125	1, 943
The Dalles	Wasco	1, 435	1, 435
Total		396, 937	396, 937

CHAPTER X.

UTAH.

By A. HANAUER.

Six counties of the territory of Utah—Beaver, Juab, Salt Lake, Summit, Tooele, and Washington—furnish the principal yield of the precious metals. The amount produced in Box Elder, Emery, Piute, and Wasatch counties is small and has but little effect on the totals. In this review the production of the base metals as well as of coal has not been considered, not being properly within the scope of this inquiry. The two precious metals—gold and silver—are alone considered.

In the production of gold, however, there has been from time to time an accompanying base of copper, and with silver there is a very general and constant accompaniment of lead, the richness and value of the silver being subject to much variation arising from the varying grade of the ores treated.

As the statistics of production show, silver is the chief product of this territory. Coined silver is in much demand for payments to laborers and the products of mines, mills, and smelters. This demand has been so pressing as to have occasioned inconvenience at times because of the difficulty of obtaining a sufficient supply.

BEAVER COUNTY.

In this county is situated the famous Horn Silver mine, which, however, did but little in the way of actual production in 1885, compared with its record of the previous year. The deposits in this county generally occur in bunches and caves of varying extent and are not found in regular and well-defined lodes. The ore is galena, carbonates, and chlorides. The ores of some of the mines carry gold, but silver predominates.

The Horn Silver, the Frisco, and the Cave are the principal mines which were worked during the past year, but a large number of smaller properties have been worked, at least to some extent, with varying results.

A small but steady supply of ore comes from the smaller properties.

JUAB COUNTY.

The chief producing district of Juab county is East Tintic, commonly called "Tintic."

The formation is much broken and twisted, and the lodes are so large and irregular as to have been the fruitful cause of protracted litigation.

The product of the district is varied, some exceedingly rich gold ore having been found in conjunction with copper, while silver occurs in conjunction with copper, iron, and lead.

The output of the district is chiefly silver, and the character of the country rock gives reasonable assurance of permanency.

The Eureka Hill and Bullion Beck are the largest producers.

Tintic county includes the towns of Eureka, Silver City, and Diamond City, in which there is always more or less mining activity.

The Tintic Company has a mill at Homansville, and works its own ore, together with custom ores. The other mine owners sell their ores. Water is very scarce in the district. West Tintic is dormant at present. Its deposits are low-grade galena.

SALT LAKE COUNTY.

There are two main mining ranges in Salt Lake county, divided by a valley some 12 miles wide at its northern limit, which gradually narrows to the north until the two ranges come almost together. The eastern range is the Wasatch; the western, the Oquirrh.

In the Wasatch range are the Big and Little Cottonwood mining districts. The latter is the principal producer. In it are the noted Emma mine, the Flagstaff, the Vallejo, and many others. The country is rugged and heavy, demanding great labor and heavy machinery for opening it up. It is also the terror of miners for its deadly snow-slides, no winter passing without many of them, often involving loss of life, sometimes to a number of persons. The ore is found in heavy chambers in the limestone, and is of high grade, some of it exceedingly rich. Extensive operations were continued through the year to find again the Emma lode, which the miners of the camp think is sure to be found. In other mines a good season's work was done and the output of ore was fair.

Prospecting is actively carried on in the district. A horse tramway 8 miles long connects the camp with the railroad of the valley below.

Big Cottonwood has produced some fine ore, but has no great mine at present producing.

In the Oquirrh range is Bingham or West Mountain mining district, in which are found the only gold placers in the territory. They have been worked for many years, but necessarily on a small scale, as their area is quite limited. Bingham is noted for its steady output. The ore is in very large deposits or bunches, and though commonly of low grade, surprisingly rich bodies are at times encountered.

Silver is the chief product, and is found in a galena matrix. A large gold ledge is known to exist, which has been developed to some extent,

but, with the appliances used, did not pay. A large number of cañons and "forks" are embraced in the general term of "the Bingham Camp," and the ores of which are of the same general character.

In Salt Lake Valley are situated the smelters which reduce the great bulk of the miscellaneous ores produced in this territory, together with large quantities which come from mining districts, north and west of it. The managers of these smelters as a rule buy the ores offered, paying so well up to the assay value that Salt Lake has now become a noted ore market for all the mountain regions. The principal smelters are the Hanauer, the Mingo, and the Germania; the latter being also a refinery, manufacturing white lead and sheet lead.

The extensive smelters and reduction works of the Horn Silver mine are also in this valley, but have been idle during the past year.

SUMMIT COUNTY.

This has the leading single camp in the territory, Park City, Uintah mining district. It contains the great Ontario mine and mill, the Daly mine and mill, the Crescent, and other properties, producing not far from half the total output of the territory. Mining is prosecuted with difficulty, as the ore lies deep, and the flow of water is strong.

The ore-bodies, however, are heavy and continuous, the formation regular, and the stratification and fissures well marked and clearly defined. The camp lies on the east slope of the Wasatch range, and embraces a comparatively level country, though by no means a plain. There have been costly failures in this camp, some through incompetent management and bad plans, but the prizes have been numerous and the rewards rich.

The smelter in Park City, erected some years ago, has been idle, not being able to compete with the smelters in the valleys from the limited selection of ores at its disposal for securing the necessary combinations, and of fluxes for economical treatment.

TOOELE COUNTY.

Some of the oldest mining developments in the territory are in Ophir and Dry Cañon districts in Tooele county. In the latter is the Mono, which at one time produced ore that was a marvel of richness, much of it running over 50 per cent. silver. The ore, however, produced by the large majority of the mines has been of low grade. The surface deposits exhausted the pay ore, and the Mono lode was lost, and in consequence the mines for some years past have lain dormant. With the advance in the price of lead during the latter part of the year new discoveries were made and new life was infused into the mines. Old claims were reopened, and pay ore was found; capital came in, and before the close of 1885 the camps were again prosperous.

Through the period of depression the Honerine Company kept on its

work, and was a constant producer. The ore is found in somewhat irregular veins and in bunches, sometimes of great size. It is largely carbonates and galena, much being of a silicious character.

WASHINGTON COUNTY.

In this county occurs the well-known silver sandstone. In the midst of a dry sandy plain arises a reef of white sandstone, with a smaller reef of red sandstone to the east. All is in an immense "scoop," 3,000 feet in depth, which has the appearance of having been washed out to that depth by tremendous floods. To the east stretches the immense arid plateau of Northern Arizona. In the valley is the sandy bed of the Rio Virgin, the stream being often half sand itself. The reefs contain many veins and bunches of ore, generally in the form of sulphurets, forming a thin black filling for interstices and cracks in the sandstone. Layers of soapstone in the sand rock are often impregnated with silver, and afford first rate ore. The rock is so soft and easily crushed that it is no uncommon performance for five stamps to run through upwards of forty tons a day. The Stormont, with a ten-stamp mill, and the Christy, with a five-stamp mill, are the main operating companies. There are, besides, leaching works, which handle the ores dug out by tributers, by whom to a large extent mining claims and leased shafts and drifts are worked. In the upper or main portions of the reefs there is no base in the ores; the product comes out of the settlers in the form of silver, almost pure. Lower down the reefs come together, or rather the smaller reef tapers off, and in the remaining reef the ore becomes of very low grade. Copper also comes into the ore, when it becomes refractory.

GOLD AND SILVER PRODUCTION IN TERRITORY OF UTAH FOR THE CALENDAR YEAR 1885.

Counties.	Gold, fine.	Value.	Silver, fine.	Coining value.	Total value.
	<i>Ounces.</i>		<i>Ounces.</i>		
Salt Lake.....	5,800	\$119,886	1,350,000	\$1,745,415	\$1,865,301
Summit.....	2,222	45,928	3,126,890	4,042,756	4,088,684
Juab.....	868	17,941	868,925	1,123,433	1,141,374
Washington.....			375,935	486,046	486,046
Beaver.....			135,000	174,541	174,541
Tooele.....	150	3,100	125,000	161,612	164,712
Total.....	9,040	186,855	5,981,750	7,733,803	7,920,658

DISTRIBUTION OF PRODUCT.

GOLD AND SILVER IN BASE BULLION PRODUCED BY SMELTERS IN SALT LAKE VALLEY AND SHIPPED TO EASTERN REFINERIES DURING CALENDAR YEAR 1885.

	Gold, fine.	Value.	Silver, fine.	Coining value.	Total value.
	<i>Ounces.</i>		<i>Ounces.</i>		
Hanauer Smelters	2, 160	\$44, 647	667, 000	\$862, 364	\$907, 011
Germania Lead Works	1, 404	29, 020	630, 000	814, 527	843, 547
Horn Silver Smelters			124, 000	160, 319	160, 319
Mingo Furnace Company	1, 586	32, 782	404, 000	522, 331	555, 113
Total	5, 150	106, 449	1, 825, 000	2, 359, 541	2, 465, 990
Gold and silver, in Doré bars, made at Ontario and Silver Reef Mills	1, 620	33, 485	2, 785, 000	3, 600, 726	3, 634, 211
Gold and silver in ores exported to reduction works outside of territory	2, 270	46, 920	1, 371, 750	1, 773, 535	1, 820, 455
Total	9, 040	186, 854	5, 981, 750	7, 733, 802	7, 920, 656

COMPARATIVE STATEMENTS, 1884 AND 1885.

	Gold.	Silver.
	<i>Ounces.</i>	<i>Ounces.</i>
Utah's product for 1884*	5, 530	5, 669, 488
Utah's product for 1885	9, 040	5, 981, 750
Increase over 1884	3, 510	312, 262

* Estimated by Wells, Fargo & Co.

PRODUCING MINES OF UTAH.

Beaver County.—Cave Mine, Horn Silver, Star Mining Company.

Juab County.—American Eagle Mining Company, Bullion, Beek & Champion Mining Company, Eureka Mining Company, Spy, Swansea.

Salt Lake County.—Oquirrh Range: Brooklyn, Dixon, Lead Mine Company, Lucky Boy, Nast, Old Telegraph, Saturn, South Galena, Spanish, Tiewaukee, Utah, Winnamuck, Yosemite. Wasatch Range: City Rocks, Evergreen, Joab Lawrence Company, Kesler Mining Company, Maxfield, New Emma, Prince of Wales, Silver Mountain.

Summit County.—Apex, Creole, Crescent, Daly, Hayt Brothers, Ontario, Sampson, Woodside.

Tooele County.—Brooklyn, California, Calumet & Hecla, Consolidated, Fritz Hill Mining Company, Hidden Treasure, Honerine, Katherine, Legal Tender, Monarch, Mono, Saratoga, Silver King, Utah Gem.

Washington County.—Christy Mining Company, Leeds Mining Company, S. L. Harding, Stormont Mining Company.

CHAPTER XI.

WASHINGTON TERRITORY.

By ISRAEL LAWTON,

Superintendent United States Mint, San Francisco, Cal.

Little information has been received from sources applied to in the territory, and little attention given communications sent to different mine owners asking for reports of production. Yet sufficient information was obtained to arrive at a fair estimate for the calendar year 1885. I estimate the production to have been \$193,672; gold, \$126,172, and silver \$67,500.

The silver mines in Stevens county are producing well. They are located near the line of Idaho, and very frequently their output has been incorrectly included in the production of Idaho. The ores of these mines contain about 70 per cent. of lead, and assay about 125 ounces of silver per ton. The gold produced is not large, and is the output of small placers situated adjacent to small streams and rivers.

Yakima county has some good quartz locations. Not having been developed to any great extent, their output is small.

Kittitass county produces a small amount yearly, the result being obtained from placers worked mostly by Chinese.

REPORTED BULLION PRODUCTION OF MINES OF WASHINGTON TERRITORY FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

County.	Gold.	Silver.	Total.
Kittitass	\$21, 172	.....	\$21, 172
Stevens	5, 000	\$67, 500	72, 500
Total	26, 172	67, 500	93, 672

UNREPORTED BULLION PRODUCTION OF MINES OF WASHINGTON TERRITORY FOR THE TWELVE MONTHS ENDING JANUARY 1, 1886.

County.	Gold.	Silver.	Total.
Jefferson	\$16, 000	.....	\$16, 000
Spokane	20, 000	.....	20, 000
Walla Walla	10, 000	.....	10, 000
Whitman	40, 000	.....	40, 000
Yakima	14, 000	.....	14, 000
Total	100, 000	.....	100, 000

BULLION PRODUCTION OF MINES OF WASHINGTON TERRITORY FOR THE
TWELVE MONTHS ENDING JANUARY 1, 1886 (COMBINES REPORTED AND
UNREPORTED PRODUCTION).

County.	Gold.		Silver.	Total.
	Reported.	Unreported.		
Jefferson		\$16,000 00		\$16,000 00
Kittitass.....	\$21,172 00			21,172 00
Spokane		20,000 00		20,000 00
Stevens.....	5,000 00		\$67,500 00	72,500 00
Walla Walla.....		10,000 00		10,000 00
Whitman.....		40,000 00		40,000 00
Yakima.....		14,000 00		14,000 00
Total	26,172 00	100,000 00	67,500 00	193,672 00

STATEMENT OF WELLS, FARGO & CO.'S SHIPMENTS FROM BULLION PRO-
DUCTION OF MINES IN WASHINGTON TERRITORY FOR THE TWELVE MONTHS
ENDING JANUARY 1, 1886.

Post-office.	County.	Gold.	Silver.	Total.
Ainsworth.....	Franklin.....	\$920		\$920
Pomeroy.....	Garfield	235		235
Port Townsend	Jefferson.....	7,846		7,846
Seattle.....	King.....	210		210
Ellensburg	Kittitass.....	13,923		13,923
Goldendale	Khkitat	215		215
Sprague	Lincoln.....	825		
Pasco.....	do	252		1,077
Cheney	Spokane	451		
Spokane Falls.....	do	17,120		17,571
Walla Walla.....	Walla Walla	3,566		
Wallula	do	176		3,742
Almonta	Whitman	1,179		
Colfax	do	13,090		
Farmington.....	do	105		
Palouse City.....	do	5,323		19,697
Kennewick	Yakima.....	6,468		
Yakima.....	do	796		7,264
Total		72,700		72,700

CHAPTER XIII.

MINES OF THE APPALACHIAN RANGE.

By ROBERT P. WARING,

Assayer in charge of United States Assay Office, Charlotte, N. C.

NORTH CAROLINA.

The mining work of North Carolina in 1885 was, in common with that of the entire southern section, in a depressed condition, but the entire output of gold and silver, including the contents of ores shipped from the state, was not much less than in 1884, being in all \$154,750, against \$159,500 in that year, of which probably \$2,750 was due to silver.

The commercial distress of the country took away the financial support of most of the doubtful enterprises, but at the same time brought about the abandonment of some worthy mines that required still further aid to become productive. This winnowing process, as a whole, was decidedly beneficial, and left the industry on a much more solid basis.

The yield of the state was almost entirely due to vein mining. The gravel work of Montgomery and the central counties remained nearly the same; but in Burke, McDowell, and Rutherford counties all work of this nature was largely abandoned by reason of the greater wages to mining labor offered by railroad contractors. Three roads in or near this district held out inducements superior to any return to be expected from the mines under the present disadvantages of work.

Greater attention was paid to the treatment of ores, and decided progress was made in the methods of concentration and in mill amalgamation. The chlorination works of the state were vigorously operated, and offered, and still offer, a home market for concentrates and other moderate or high grade auriferous sulphurets, and at prices allowing a considerably larger margin to the miner. This plan of custom-work had not at the end of the year passed, perhaps, entirely beyond the experimental stage, but the result was believed to have been promising. The commercial features of such works, rather than the scientific or metallurgical ones, will prove to be the critical points in this and like enterprises.

Considerable English capital is now invested in North Carolina, and under fairly favorable conditions, except that here as elsewhere the

mines have been put on the market at too high prices. The production of the state by counties is approximately indicated below:

Anson County	\$250
Burke, McDowell, and Rutherford Counties.....	20,000
Cabarrus County	14,000
Caldwell, Catawba, and Cherokee Counties.....	1,000
Davidson	1,000
Franklin, Nash, and Warren Counties	2,500
Gaston County	1,000
Granville County.....	1,000
Guilford County	4,000
Mecklenburgh County	16,000
Montgomery County.....	8,000
Moore County	1,000
Polk County.....	4,500
Randolph County.....	69,000
Rowan County	6,000
Stanly County	2,500
Union County	1,000
Miscellaneous.....	2,000
<hr/>	
Total.....	154,750

Of this amount \$8,000 is believed to be the contents of ore shipped from the state.

The silver contents of the entire product approximates \$2,750.

Number of men regularly employed.....	698
Number of men employed at intervals	100
Number of stamps in use.....	459
Number of Chilian and other mills.....	17
Number of metallurgical establishments	2

The detailed statement of work will be given by counties, alphabetically arranged.

The critical points of the estimate will be found under the following heads: (1) Burke, McDowell, and Rutherford; (2) Cabarrus; (3) Guilford; (4) Mecklenburgh; (5) Polk; (6) Montgomery; (7) Randolph; (8) Rowan. The other counties have been for the most part estimated from the deposits at the United States assay office at Charlotte. Other estimates will be sufficiently shown in the papers accompanying this, *i. e.*, copies of reports.

BURKE COUNTY, &C.

The deposits at the assay office at Charlotte were \$13,011.86. The superintendent of the Vein Mountain mine reported his product at \$4,000. This was in rich nuggets from a locality accidentally found, and is believed to be correct in so far that it was not an overestimate. All of this bullion was stored and not deposited. The vice-president of the Marion Bullion Company, an adjoining mine, reported shipments aggregating \$9,000, but from a knowledge of the character of the property it is believed that \$3,000 will be nearer the correct amount.

The statement for Burke, &c., is therefore:

Known deposits at Charlotte.....	\$13,000
Produced by the Vein Mountain and Marion Bullion Companies.....	7,000
Total.....	20,000

The bullion of both these companies was stored at the head offices.

CABARRUS COUNTY.

The superintendent of the Phœnix, once a large producing mine, absolutely refused, on prudential grounds, to give the amount of its production, simply saying that he had done as well as in former years. This statement is doubted, as in former years as high as \$24,000 had been reported, while in 1885 work was interrupted longer by drought and by delays to machinery. The production of \$24,000 reported in former years is regarded as considerably above the actual product, taking the delays and interruptions into consideration. Therefore it is believed that the year's output cannot exceed \$12,000. The deposits at the assay office at Charlotte by this company amounted to \$1,671.78 during the year, and it is stated that shipments to the North are occasionally made by country merchants of lots purchased or received in trade.

The product of the county is therefore put at \$14,000.

GUILFORD COUNTY.

One car load of ore was shipped North from this county during the year. Two runs were made at the Fisher Hill vein, and the bullion, amounting to \$3,212.62, was also shipped to the North. The deposits at the assay office at Charlotte were \$251.61. The total product is believed to have been about \$4,000.

MECKLENBURGH COUNTY.

The actual deposits at the assay office at Charlotte from this county amounted to \$11,323.73. A small quantity of ore was shipped by the Rudisil to Newark, and the Saint Catharine also shipped considerable ore and some bullion. The managers of neither of these properties would give a statement of operations or report the amount of bullion produced. The shipment of the Rudisil did not probably exceed \$500. The shipments from the Saint Catharine were made during the early part of the year. Afterwards its bullion was deposited at the assay office at Charlotte, and its ore sold to works in the state for treatment. From the deposits of the latter mine during the latter portion of the year it is believed that \$4,500 is a fair estimate of output not embraced in other returns. The entire production of the county is accordingly placed at about \$16,000.

POLK COUNTY.

For this county the deposits at the United States assay office at Charlotte during the year 1885 were \$637.49. Several of the principal operators shipped the greater portion of their product to the North for

treatment, owing to dissatisfaction with the returns received from the home office. The production is variously estimated, but is not believed to exceed \$4,500.

MONTGOMERY COUNTY.

The production of this county during the year was about \$8,000, of which amount nearly \$1,500 was deposited at the assay office at Charlotte. The remainder, shipped to London, was the product of the Russell mine, as reported by its superintendent.

RANDOLPH COUNTY.

Almost the entire product of this county, amounting to about \$69,000, was also sent to London, and was almost wholly the output of the Hoover Hill mine. The deposits at the assay office at Charlotte were \$120, and about \$500 worth of bullion was shipped to the North by merchants. These amounts represent the yield of properties other than Hoover Hill.

ROWAN COUNTY.

The greater portion of the product of this county found its way to the assay office at Charlotte, at which the deposits amounted to some \$5,300. The entire production of the county is not believed to exceed \$6,000, the excess being treated at the Yadkin works.

These figures show that about \$140,000 of the output of North Carolina has either been treated at the Government assay office at Charlotte or shipped abroad, leaving less than \$15,000 to cover the probable amounts purchased by merchants and shipped North, as well as the quantity treated at private works, and that still held by mining companies, as in the case of "Vein Mountain" and the "Marion Bullion." It is believed, therefore, that the estimate of the total production, as submitted, is rather conservative than forced.

SOUTH CAROLINA.

The mining industry in this state is confined to a few placers, and is under conditions which change but little from year to year. These conditions favor steady work and a measurably uniform production.

Speculative mining has found little scope in the state. The auriferous deposits are for the most part of large extent, but of low grade, so when favorable conditions are met with operations are calculable for some time in advance.

Three mines were discontinued during 1885, and no new enterprises were taken up, so that the production of the state has fallen a little below that of 1884. The following is my estimate:

Lancaster and Chesterfield Counties.....	\$40,000
Spartanburg, Union, and York Counties	3,000
Miscellaneous.....	1,000
Total	44,000

in support of which the following facts and figures are adduced:

The deposits from Lancaster and Chesterfield counties at the assay

office at Charlotte aggregated \$36,400. This amount was from the Brewer and Haile mines.

The statement of the superintendent of the Haile mine agrees substantially with the credit of that mine on the books of this office, but that of the Brewer exceeds the credit by \$2,300, and as the superintendent claims that he did not deposit all his gold, it is believed that this amount still remains on hand.

No statement was received from the superintendent of the Funderburke, which stopped work early in the summer of 1885, but as the mill had been operated for some time, and the gold was "held," the sum of \$3,500 is allowed to these counties in addition to that which was deposited, viz, \$36,400, or in all, \$40,000. The product from the West mine, near Spartanburg, has heretofore gone to Philadelphia, the headquarters of the company. No report of production was received in response to my request, but from information indirectly obtained it is believed to have been about \$2,500, which may be incidentally confirmed by the deposits at the Philadelphia mint.

The incidental deposits of these counties at the assay office at Charlotte aggregate \$700, and the entire production of this section is believed to have been about \$3,000.

The miscellaneous production of the state may be stated at about \$1,000.

GEORGIA.

The production of this state in 1885 remained about the same as in 1884, but there were changes in the various districts, some counties falling off, and others, like McDuffie, Lincoln, and particularly Cherokee, making a considerable increase.

I am not aware that there was any marked improvement in the mining industry of the state, though the more careful superintendents are gradually improving their methods. This is extremely difficult, where, from the nature of the case, the greater part of their material averages less than \$1 per ton in value. The cost of extra handling of so much ore rapidly eats up any possible profit arising from its reduction, except such handling be effected by automatic action of machinery and other appliances. This difficulty is very general. At the Franklin and McDonald mine the occurrence of large bodies of sulphurets, which are auriferous, allows of concentration after the methods practised elsewhere.

In estimating the production of Georgia much credit is due the superintendents of various mines, and especially Mr. Frank W. Hall, of Dahlonega, Ga., who, from his connection with the various mining districts of the state, has exceptional opportunities for acquiring accurate information.

The yield, arranged according to counties and districts, is believed to have been as follows:

Rabun and Habersham	\$2, 000
Columbia and counties adjacent to Merriwether.....	4, 000
Lincoln.....	5, 500

McDuffie	\$6,000
White	7,000
Lumpkin	76,500
Dawson	2,500
Towns to Gilmer and Carroll	6,000
Cherokee	18,000
Miscellaneous.....	9,000
Total	136,500

ESTIMATES OF PRODUCTION FOR GEORGIA FOR 1885.

RABUN AND HABERSHAM COUNTIES.

The actual deposits at the U. S. assay office at Charlotte from these counties amounted to \$1,568.72. It is therefore believed that in estimating the output at \$2,000 it cannot be far out of the way. A part of the yield will naturally find its way into commerce without due credit, particularly when the production is handled in such small quantities.

The estimate for Columbia to Merriwether counties is based principally upon information derived from merchants and others who have traveled over this extensive scope of country. It is not claimed, therefore, that the amount is strictly accurate, but it may be considered a reasonable approximation.

LINCOLN COUNTY.

The deposits from this county at the assay office at Charlotte amounted to a trifle more than \$5,000.

M'DUFFIE COUNTY.

The deposits at the assay office at Charlotte from this county were a little more than \$5,600.

WHITE COUNTY.

From this county the deposits were \$6,789.90, and the entire yield for the year is estimated to have been \$7,000.

LUMPKIN COUNTY.

The aggregate of deposits from Lumpkin county for the year was \$65,475.95, as shown by the books of the assay office at Charlotte. The product for the Consolidated Georgia was for the most part sent north. No official statement as to its yield was received from the superintendent, but unofficially he has given the output for the year of the two mines at about \$10,000. A little more than \$1,500 of this amount was sent to Charlotte, and is included in the above statement of deposits for the county. It is not believed that more than \$5,000 was sent north from this property. The Garnet was operated a short time in the early part of the year, and its product was sent to New York, presumably by mail, as was the practice in 1884. No statement was submitted by the company, but from the production in the closing months of 1884 its yield during the year is not believed to have exceeded \$2,500.

The lessee of the Findley deposited \$1,700 at the assay office at Charlotte, and shipped in the rough about twice as large a sum, in the form of specimens of native gold, valued on account of their beauty and rarity.

DAWSON COUNTY.

The actual deposits at the U. S. assay office at Charlotte were \$2,189.93, and the total output is estimated at \$2,500.

TOWNS TO GILMER AND CARROLL.

The deposits from this section at the assay office at Charlotte were \$1,151.70. A report from the Clopton mine credits it with a direct production of 170 ounces gold, and shipment of ore to the value of \$727.70, a total valuation of \$3,176.09. Of this amount only \$25.94 was deposited at the assay office at Charlotte. It is therefore believed that the production is considerably exaggerated, and that one-half the amount would be nearer the correct figures. The known amount of the production of this section is \$2,300; the remainder of the \$6,000 is estimated, and based upon reports of merchants and travelers.

CHEROKEE COUNTY.

The production of this county is placed at \$18,000. Of this amount \$17,297.60 are shown by the books of the assay office at Charlotte to have been deposited at that institution. The remainder is believed to have found its way into commerce uncredited.

Of the miscellaneous production \$9,036.13 were deposited at the assay office at Charlotte, part of which was simply marked "North Georgia, several counties." It is consequently impossible to trace the source with more accuracy.

STATEMENT OF BULLION FORWARDED BY THE SOUTHERN EXPRESS COMPANY
FROM GAINESVILLE, GA., FOR THE PERIOD JANUARY 1 TO JUNE 30, 1885.

Date.	Shipper.	Locality.	Reported or estimated value.	Consignee and destination.
Jan. 6....	Banks & Bro	Gainesville	\$4,700	C. J. Cowles, Charlotte.
Jan. 10...	Hall M. Co.....	Dahlonega, Ga....	600	Do
Jan. 13...	.....do	do	100	Do
Feb. 20 ..	.....do .....	.....do	375	Shipper not given.
Feb. 17..	Banks & Bro.....	Gainesville	4,500	C. J. Cowles, Charlotte.
March 4..	Hall Mdse. Co.....	Dahlonega, Ga ...	450	Do
March 8..	.....do	do	450	Do
March 8..	Banks & Bro	Gainesville	3,500	Do
May 4....	.....do	do	3,000	Do
May 6 ...	Hall Mdse. Co....	Dahlonega, Ga....	900	Nelson & White, New York.
May 8....	.....do	do	225	C. J. Cowles, Charlotte.
May 13...	.....do	do	200	Do
May 21..	J. P. Imboden	do	125	Do
June 1 ..	G. W. Gibson.....	Gainesville	300	A. B. Gardiner, New York.
June 4...	Hall Mdse. Co	Dahlonega.....	350	C. J. Cowles, Charlotte.
June 3...	Banks & Bro	Gainesville	5,000	Do
June 5...	Kin Mori Gold M. Co.	Dawsonville	300	Do
			25,075	
Amount carried by private means ..			3,500	
			28,575	

STATEMENT OF BULLION FORWARDED BY THE SOUTHERN EXPRESS COMPANY
FROM GAINESVILLE, GA., FOR THE PERIOD JULY 1 TO DECEMBER 31, 1885.

Date.	Shipper.	Locality.	Reported or estimated value.	Consignee and destina- tion.
July 6	Banks & Bro.....	Gainesville	\$7,000	C. J. Cowles, Charlotte.
July 6	Consolidated G. M. Co.	Dawsonville	900	Assay office, Charlotte.
July 10	J. R. Logan.....	Gainesville	250	C. J. Cowles, Charlotte.
July 24	Hall Mdse. Co	Dahlonge.....	300	Do.
Aug. 3	Banks & Bro.....	Gainesville	100	Do.
Aug. 4	.....do .....	.. do	4,300	Assay office, Charlotte
Aug. 12	Lin Mori G. M. Co....	Dawsonville	200	C. J. Cowles, Charlotte.
Sept. 3	Banks & Bro.....	Gainesville	3,000	Do.
Sept. 9	Hall Mdse. Co	Dahlonge.....	600	Do.
Sept. 17	Kin Mori G. M. Co....	Dawsonville	300	Do.
Oct. 2	Hall Mdse. Co	Dahlonge.....	300	Do.
Oct. 5	Banks & Bro.....	Gainesville	5,000	Do.
Oct. 6	Lin Mori G. M. Co ..	Dawsonville	150	Do.
Oct. 8	Hall Mdse. Co	Dahlonge.....	400	Do.
Oct. 15	D. Lee Wordroper....	Dawsonville	150	Do.
Oct. 28	Banks & Bro.....	Gainesville	500	Do.
Nov. 4	.....do .....	..do	3,000	Do.
Nov. 4	Kin Mori G. M. Co ...	Dawsonville	350	Do.
Nov. 16	D. Lee Wordroper ..	... do	60	Do.
Nov. 20	Banks & Bro.....	Gainesville.. ..	250	U. S. Assayer, Charlotte.
Dec. 3	Hall Mdse. Co	Dahlonge	200	R. P. Waring, Charlotte.
Dec. 4	Banks & Bro.....	Gainesville	3,000	Do.
Dec. 14	.....do .....	.. do	400	Do.
Dec. 14	Kin Mori G. M. Co ...	Dawsonville	320	Do.
Dec. 19	Wooding & Co.....	Gainesville	140	Mint, Philadelphia.
Dec. 30	Hall Mdse. Co	Dahlonge	225	R. P. Waring, Charlotte.
			31,395	
Amount carried by private means			3,500	
			34,895	

This express résumé reports shipments estimated by shippers at \$56,470, of which \$50,830 was sent to this office; but our books show that the gross assay value of our receipts by express from Gainesville was \$58,534.66, thus showing that the shippers' estimate must be increased, in fact, by a little more than 15 per cent. This would make the actual value of the shipments from Gainesville to *all* points nearly \$65,000.

ALABAMA.

The work in Alabama was on the whole in a backward condition during the year 1885, and apparently unchanged in character or extent as compared with 1884.

No additional information could be obtained from the Cooper Creek mine, in Tallapoosa county.

The Arbacoochee and the Pinetuehee districts showed nothing but the customary petty mining, which was estimated to return \$1,500 or \$2,000.

From the Shenker mine, at Idaho, Clay county, the following operations are reported:

"The ore is extracted from an open cut about twenty feet in width, and several shafts have been sunk to a depth of forty feet, all in ore. The ore body averages about \$5 to the ton in value. The character of the ore is decomposed quartz, with veins of solid quartz running through. It is mined by hand, and requires very little blasting. A Hall five-stamp mill is being operated, and it is intended to add five stamps more during this year. The water supply is not abundant, but can be increased from other sources."

The production of the state is believed to have been about the same as that of last year—\$8,000—of which a very small proportion was silver.

H. Ex. 290 —13

PART III.

GENERAL STATISTICS.

I.—DEPOSITS AND PURCHASES OF GOLD AND SILVER BULLION, BY

Description.	COINAGE MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
GOLD.				
	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>
United States bullion (domestic production)	11, 099. 536	1, 049, 995. 253	40, 821. 311	.....
United States coin	5, 609. 977	65. 300	.....	1, 141. 435
Foreign bullion	3, 770. 270	93, 342. 298	.....	1, 101. 303
Foreign coin	33. 173	240, 809. 742	.....	2, 292. 557
Jewelers' bars, old plate, &c.	33, 578. 572	1, 064. 013	.....	2, 451. 450
Total	54, 091. 528	1, 385, 276. 606	40, 821. 311	6, 986. 745
Redeposits:				
Fine bars	10, 437. 736	.....	.....	.....
Unparted bars	97, 570. 803	27. 121	.....	.....
Total gold received and operated upon	162, 100. 067	1, 385, 303. 727	40, 821. 311	6, 986. 745
SILVER.				
United States bullion (domestic production)	12, 811, 066. 67	1, 438, 284. 59	447, 787. 08	8, 155, 878. 06
United States coin	591, 140. 83	6, 244. 25	10. 70	3, 046. 31
Foreign bullion	3, 159. 16	653, 312. 78	.....	90, 897. 82
Foreign coin	625, 292. 39	5, 088. 28	.....	192, 789. 65
Jewelers' bars, old plate, &c.	146, 062. 09	3, 982. 98	.....	22, 654. 87
Total	14, 176, 721. 14	2, 106, 912. 88	447, 797. 78	8, 465, 266. 71
Redeposits:				
Fine bars	1, 063, 015. 28	.....	.....	.....
Unparted bars	550, 907. 67	434. 01	.....	.....
Total silver received and operated upon	15, 790, 644. 09	2, 107, 346. 89	447, 797. 78	8, 465, 266. 71
Gold and silver deposits and purchases.	14, 230, 812. 668	3, 492, 189. 486	488, 619. 091	8, 472, 253. 455
Redeposits:				
Gold	108, 008. 539	27. 121	.....	.....
Silver	1, 613, 922. 95	434. 01	.....	.....
Total gold and silver received and operated upon	15, 952, 744. 157	3, 492, 650. 617	488, 619. 091	8, 472, 253. 455

WEIGHT, DURING THE CALENDAR YEAR ENDING DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Boisé.	Helena.	Charlotte.	Saint Louis.	
<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>	<i>Standard ozs.</i>
417, 120. 407	63, 299. 191	7, 327. 276	57, 068. 272	10, 481. 411	3, 296. 017	1, 660, 508. 674
12, 544. 468	.....	.....	.....	.....	545. 613	19, 906. 793
118, 829. 057	.....	.....	.....	6. 556	164. 555	217, 214. 039
162, 618. 959	.....	.....	.....	.....	.....	405, 754. 431
60, 487. 341	196. 862	.....	.....	35. 193	2, 182. 927	99, 996. 358
771, 600. 232	63, 496. 053	7, 327. 276	57, 068. 272	10, 523. 160	6, 189. 112	2, 403, 380. 295
59, 857. 674	.....	.....	.....	.....	.....	70, 295. 410
72, 682. 605	926. 844	.....	514. 522	.....	.....	171, 721. 895
904, 140. 511	64, 422. 897	7, 327. 276	57, 582. 794	10, 523. 160	6, 189. 112	2, 645, 397. 600
4, 193, 523. 77	15, 837. 37	1, 713. 64	65, 120. 57	965. 37	943. 53	27, 131, 120. 65
2, 547. 56	.....	.....	.....	.....	100. 85	603, 090. 50
778, 250. 23	.....	.....	.....	. 84	118. 35	1, 525, 739. 18
319, 096. 92	.....	.....	.....	8. 75	.....	1, 142, 275. 99
217, 501. 29	1. 38	.....	.....	102. 90	4, 654. 02	394, 959. 53
5, 510, 919. 77	15, 838. 75	1, 713. 64	65, 120. 57	1, 077. 86	5, 816. 75	30, 797, 185. 85
63, 359. 97	.....	.....	.....	.....	.....	1, 126, 375. 25
71, 924. 90	65. 25	.....	527. 72	.....	.....	623, 859. 55
5, 646, 204. 64	15, 904. 00	1, 713. 64	65, 648. 29	1, 077. 86	5, 816. 75	32, 547, 420. 65
6, 282, 520. 002	79, 334. 803	9, 040. 916	122, 188. 842	11, 601. 020	12, 005. 862	33, 200, 566. 145
132, 540. 279	926. 844	.....	514. 522	.....	.....	242, 017. 305
135, 284. 870	65. 25	.....	527. 72	.....	.....	1, 750, 234. 80
6, 550, 345. 151	80, 326. 897	9, 040. 916	123, 231. 084	11, 601. 020	12, 005. 862	35, 192, 818. 250

II.—DEPOSITS AND PURCHASES OF GOLD AND SILVER BULLION, BY

Description.	COINAGE MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
GOLD.				
United States bullion (domestic production)	\$206,502 99	\$19,534,795 40	\$759,466 25	.....
United States coin.....	104,371 67	1,214 88	.....	\$21,236 00
Foreign bullion.....	70,144 56	1,736,600 89	.....	20,489 36
Foreign coin.....	617 17	4,480,181 25	.....	42,652 22
Jewelers' bars, old plate, &c	624,717 62	19,795 59	.....	45,608 37
Total	1,006,354 01	25,772,588 01	759,466 25	129,985 95
Redeposits:				
Fine bars.....	194,190 44	.....	.....	.....
Unparted bars.....	1,815,270 75	504 58	.....	.....
Total gold received and operated upon.....	3,015,815 20	25,773 092 59	759,466 25	129,985 95
SILVER.				
United States bullion (domestic production)	14,907,423 03	1,673,640 26	521,061 32	9,490,476 29
United States coin.....	687,872 97	7,266 04	12 45	3,544 80
Foreign bullion.....	3,676 11	760,218 50	.....	105,772 01
Foreign coin.....	727,612 96	5,920 91	.....	224,337 04
Jewelers' bars, old plate, &c	169,963 15	4,634 74	.....	26,362 03
Total	16,496,548 22	2,451,680 45	521,073 77	9,850,492 17
Redeposits:				
Fine bars.....	1,236,963 23	.....	.....	.....
Unparted bars.....	641,056 20	505 03	.....	.....
Total silver received and operated upon.....	18,374,567 65	2,452,185 48	521,073 77	9,850,492 17
Gold and silver deposits and purchases	17,502,902 23	28,224,268 46	1,280,540 02	9,980,478 12
Redeposits:				
Gold.....	2,009,461 19	504 58	.....	.....
Silver.....	1,878,019 43	505 03	.....	.....
Total gold and silver received and operated upon.....	21,390,382 85	28,225,278 07	1,280,540 02	9,980,478 12

VALUE, DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Boise.	Helena.	Charlotte.	Saint Louis.	
\$7,760,379 67	\$1,177,659 37	\$136,321 42	\$1,061,735 29	\$195,003 00	\$61,321 25	\$30,893,184 64
233,385 45	.....	.....	.....	.....	10,150 94	370,358 94
2,210,773 15	.....	.....	.....	121 97	3,061 49	4,041,191 42
3,025,469 01	.....	.....	.....	.....	.....	7,548,919 65
1,125,345 88	3,662 55	.....	.....	654 75	40,612 59	1,860,397 35
14,355,353 16	1,181,321 92	136,321 42	1,061,735 29	195,779 72	115,146 27	44,714,052 00
1,113,631 14	.....	.....	.....	.....	.....	1,307,821 58
1,352,234 51	17,243 60	.....	9,572 50	.....	.....	3,194,825 94
16,821,218 81	1,198,565 52	136,321 42	1,071,307 79	195,779 72	115,146 27	49,216,699 52
4,879,736 75	18,428 94	1,994 05	75,776 66	1,123 34	1,097 92	31,570,758 56
2,964 43	.....	.....	.....	.....	117 35	701,778 34
905,600 26	.....	.....	.....	98	137 72	1,775,405 58
371,312 78	.....	.....	.....	10 18	.....	1,329,193 87
253,092 41	1 61	.....	.....	119 74	5,415 59	459,589 27
6,412,706 63	18,430 55	1,994 05	75,776 66	1,254 24	6,768 58	35,836,725 32
73,727 96	.....	.....	.....	.....	.....	1,310,691 19
83,694 43	75 93	.....	614 07	.....	.....	725,945 66
6,570,129 02	18,506 48	1,994 05	76,390 73	1,254 24	6,768 58	37,873,362 17
20,768,059 79	1,199,752 47	138,315 47	1,137,511 95	197,033 96	121,914 85	80,550,777 32
2,465,805 65	17,243 60	.....	9,572 50	.....	.....	4,502,647 52
157,422 39	75 93	.....	614 07	.....	.....	2,036,636 85
23,391,347 83	1,217,072 00	138,315 47	1,147,698 52	197,033 96	121,914 85	87,090,061 69

III.—DEPOSITS OF UNREFINED GOLD OF DOMESTIC PRODUCTION, WITH THE STATES DISTRIBUTED, DURING THE CALENDAR

[In standard ounces.]

Locality.	COINAGE MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
Alabama	37.862			
Alaska		5,224.281		
Arizona	719.208	12,426.565		
California	104.027	231,684.623	4,392.201	
Colorado	2,289.551	102.843		
Dakota	23.382			
Georgia	409.395			
Idaho	51.834	16,257.427		
Maryland	82.732			
Michigan	713.260			
Missouri	747			
Montana	20.482	4,159.566		
Nebraska	26.588			
Nevada		41,509.969	36,429.110	
New Mexico	3,820.173	2,640.680		
North Carolina	987.902			
Oregon		21,146.045		
South Carolina	97.134			
Tennessee	6.392			
Utah	6.622	2,947.906		
Vermont				
Virginia	148.064			
Washington Territory		2,180.872		
Wyoming	283.272	9.901		
Other sources	504.580	17,509.471		
Total unrefined	10,333.207	357,800.154	40,821.311	
Refined bullion	766.329	692,195.099		
Grand total	11,099.536	1,049,995.253	40,821.311	

AND TERRITORIES PRODUCING THE SAME, AND OF REFINED DOMESTIC BULLION NOT YEAR ENDED DECEMBER 31, 1885.

[In standard ounces.]

ASSAY OFFICES.						Total.
New York.	Denver.	Saint Louis.	Boisé.	Helena.	Charlotte.	
62.529	-----	28.125	-----	-----	11.852	140.368
63.461	-----	-----	-----	-----	-----	5,287.742
-----	49.793	51.938	-----	-----	-----	13,247.504
468.113	16.829	2.650	-----	-----	-----	236,668.443
91,606.226	58,382.675	839.095	-----	-----	-----	153,220.395
153,979.325	-----	-----	-----	-----	-----	154,002.707
268.294	-----	-----	-----	-----	6,210.218	6,887.907
4,512.174	-----	471.018	5,688.488	14,673.998	-----	41,654.939
-----	-----	-----	-----	-----	-----	82.732
878	-----	-----	-----	-----	-----	714.138
-----	-----	-----	-----	-----	-----	747
47,236.703	97.260	7.077	-----	42,348.899	-----	93,869.987
-----	-----	-----	-----	-----	-----	26.588
-----	-----	-----	-----	-----	-----	77,939.079
977.144	4,395.244	1,856.832	-----	-----	-----	13,690.073
242.385	-----	-----	-----	-----	2,254.124	3,484.411
-----	-----	-----	1,632.849	-----	11.848	22,790.742
46.913	-----	-----	-----	-----	1,993.369	2,137.416
-----	-----	-----	-----	-----	-----	6.392
299.771	-----	-----	-----	-----	-----	3,254.299
378.802	-----	-----	-----	-----	-----	378.802
10.699	-----	-----	-----	-----	-----	158.763
-----	-----	-----	5.939	45.375	-----	2,232.186
88.258	357.390	-----	-----	-----	-----	738.821
195.288	-----	39.282	-----	-----	-----	18,248.621
300,436.963	63,299.191	3,296.017	7,327.276	57,068.272	10,481.411	850,863.802
116,683.444	-----	-----	-----	-----	-----	809,644.872
417,120.407	63,299.191	3,296.017	7,327.276	57,068.272	10,481.411	1,660,508.674

IV.—DEPOSITS OF UNREFINED SILVER OF DOMESTIC PRODUCTION, WITH THE STATES
DISTRIBUTED, DURING THE CALENDAR

[In standard ounces,]

Locality.	MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
Alabama.....	5. 60			
Alaska.....		745. 48		
Arizona.....	355. 53	26, 723. 35		
California.....	14. 71	94, 809. 50	4, 182. 85	
Colorado.....	881. 02	18. 53		
Dakota.....	1. 90			
Georgia.....	47. 23			
Idaho.....	1, 508. 40	21, 648. 45		
Maryland.....	2. 04			
Michigan.....	7, 908. 58			
Missouri.....	308. 61			
Montana.....	6. 26	380. 51		
Nebraska.....	3. 23			
Nevada.....		967, 592. 06	443, 604. 23	
New Mexico.....	4, 043. 26	1, 183. 07		
North Carolina.....	130. 61			
Oregon.....		3, 382. 67		
South Carolina.....	30. 93			
Tennessee.....	. 95			
Texas.....		87. 95		
Utah.....	. 08	12, 971. 93		
Virginia.....	27. 33			
Washington Territory.....		348. 90		
Wyoming.....	44. 25	. 48		
Other sources.....	3, 036. 95	308, 104. 31		
Total unrefined.....	18, 357. 47	1, 437, 997. 19	447, 787. 08	
Refined bullion.....	12, 792, 709. 20	287. 40		8, 155, 878. 06
Grand total.....	12, 811, 066. 67	1, 438, 284. 59	447, 787. 08	8, 155, 878. 06

AND TERRITORIES PRODUCING THE SAME, AND OF REFINED DOMESTIC BULLION NOT
YEAR ENDED DECEMBER 31, 1885.

[In standard ounces.]

ASSAY OFFICES.						Total.
New York.	Denver.	Saint Louis.	Boisé.	Helena.	Charlotte.	
17. 48		7. 93			3. 54	34. 55
						745. 48
10, 587. 66		13. 85				37, 680. 39
857. 16		44				99, 864. 66
851, 588. 34	15, 648. 70	405. 74				868, 542. 33
66, 792. 40						66, 794. 30
49. 33					476. 98	573. 54
67, 608. 82		280. 23	1, 355. 74	2, 447. 90		94, 849. 54
						2. 04
17, 957. 66						25, 866. 24
						308. 61
2, 024, 485. 67		. 85		62, 663. 78		2, 087, 537. 07
234, 785. 72						234, 788. 95
						1, 411, 196. 29
	170. 99	224. 22				5, 621. 54
62. 17					315. 18	507. 96
			356. 62		1. 53	3, 740. 82
					168. 14	199. 07
						95
						87. 95
150, 916. 58						163, 888. 59
2. 25						29. 58
			1. 28	8. 89		359. 07
6. 89	17. 68					69. 30
11, 760. 72		10. 27				322, 912. 25
3, 437, 478. 85	15, 837. 37	943. 53	1, 713. 64	65, 120. 57	965. 37	5, 426, 201. 07
756, 044. 92						21, 704, 919. 58
4, 193, 523. 77	15, 837. 37	943. 53	1, 713. 64	65, 120. 57	965. 37	27, 131, 120. 65

V.--DEPOSITS OF UNREFINED GOLD OF DOMESTIC PRODUCTION, WITH THE STATES NOT DISTRIBUTED, DURING THE CALEN

Locality.	MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
Alabama.....	\$704 41			
Alaska		\$97, 195 93		
Arizona	13, 380 61	231, 191 91		
California.....	1, 935 39	4, 310, 411 59	\$81, 715 37	
Colorado	42, 596 30	1, 913 45		
Dakota	435 01			
Georgia.....	7, 616 65			
Idaho	964 35	302, 463 76		
Maryland	1, 539 20			
Michigan	13, 269 95			
Missouri	13 90			
Montana.....	381 06	77, 387 27		
Nebraska.....	494 66			
Nevada.....		772, 278 49	677, 750 88	
New Mexico	71, 072 99	49, 128 93		
North Carolina	18, 379 57			
Oregon		393, 414 79		
South Carolina.....	1, 807 14			
Tennessee	118 92			
Utah.....	123 20	54, 844 76		
Vermont.....				
Virginia	2, 754 68			
Washington Territory.....		40, 574 36		
Wyoming.....	5, 270 18	184 21		
Other sources.....	9, 387 54	325, 757 60		
Total unrefined	192, 245 71	6, 656, 747 05	759, 466 25	
Refined bullion ..	14, 257 28	12, 878, 048 35		
Grand total	206, 502 99	19, 534, 795 40	759, 466 25	

AND TERRITORIES PRODUCING THE SAME, AND OF REFINED DOMESTIC BULLION
DAR YEAR ENDED DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Saint Louis.	Boisé.	Helena.	Charlotte.	
\$1,163 33		\$523 26			\$220 50	\$2,611 50
1,180 67						98,376 60
	\$926 38	966 29				246,465 19
8,709 08	313 10	49 30				4,403,133 83
1,704,301 88	1,086,189 30	15,611 07				2,850,612 00
2,864,731 63						2,865,166 64
4,991 52					115,538 94	128,147 11
83,947 42		8,763 13	\$105,832 33	\$273,004 61		774,975 60
						1,539 20
16 33						13,286 28
						13 90
878,822 38	1,809 49	131 66		787,886 49		1,746,418 35
						494 66
						1,450,029 37
18,179 42	81,771 98	34,545 71				254,699 03
4,509 49					41,937 19	64,826 25
			30,378 59		220 43	424,013 81
872 80					37,085 96	39,765 90
						118 92
5,577 14						60,545 10
7,047 48						7,047 48
199 05						2,953 73
			110 49	844 19		41,529 04
1,642 00	6,649 12					13,745 51
3,633 27		730 83				339,509 24
5,589,524 89	1,177,659 37	61,321 25	136,321 41	1,061,735 29	195,003 02	15,830,024 24
2,170,854 76						15,063,160 39
7,760,379 65	1,177,659 37	61,321 25	136,321 41	1,061,735 29	195,003 02	30,893,184 63

VI.—DEPOSITS OF UNREFINED SILVER OF DOMESTIC PRODUCTION, WITH THE BULLION NOT DISTRIBUTED, DURING THE

Locality.	MINTS.			
	Philadelphia.	San Francisco.	Carson.	New Orleans.
Alabama.....	\$6 52			
Alaska.....		\$867 47		
Arizona.....	413 70	31,096 26		
California.....	17 12	110,323 78	\$4,867 31	
Colorado.....	1,025 19	21 56		
Dakota.....	2 21			
Georgia.....	54 96			
Idaho.....	1,755 22	25,190 92		
Maryland.....	2 37			
Michigan.....	9,202 70			
Missouri.....	359 11			
Montana.....	7 28	442 77		
Nebraska.....	3 76			
Nevada.....		1,125,925 31	516,194 01	
New Mexico.....	4,704 88	1,376 66		
North Carolina.....	151 98			
Oregon.....		3,936 20		
South Carolina.....	35 99			
Tennessee.....	1 11			
Texas.....		102 34		
Utah.....	09	15,094 61		
Vermont.....	31 80			
Washington Territory.....		405 99		
Wyoming.....	51 49	56		
Other sources.....	3,533 89	358,521 38		
Total unrefined.....	21,361 37	1,673,305 81	521,061 32	
Refined bullion.....	14,886,061 61	334 43		\$9,490,476 27
Grand total.....	14,907,422 98	1,673,640 24	521,061 32	9,490,476 27

STATES AND TERRITORIES PRODUCING THE SAME, AND OF REFINED DOMESTIC
CALENDAR YEAR ENDED DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Saint Louis.	Boisé.	Helena.	Charlotte.	
\$20 34	\$9 23	.....	.....	\$4 12	\$40 21
.....	867 47
12,320 19	16 12	.....	.....	.....	43,846 27
997 42	51	.....	.....	.....	116,206 14
990,939 16	\$18,209 39	472 13	.....	.....	.....	1,010,667 43
77,722 07	77,724 28
57 40	555 03	667 39
78,672 08	326 09	\$1,577 59	\$2,848 46	.....	110,370 36
.....	2 37
20,896 18	30,098 88
.....	359 11
2,355,765 14	99	.....	72,917 85	.....	2,429,134 03
273,205 20	273,208 96
.....	1,642,119 32
.....	198 97	260 91	.....	.....	.....	6,541 42
72 34	366 75	591 07
.....	414 97	.....	1 78	4,352 95
.....	195 65	231 64
.....	1 11
.....	102 34
175,612 02	190,706 72
2 62	34 42
.....	1 49	10 34	.....	417 82
8 02	20 57	.....	.....	.....	.....	80 64
13,685 20	11 95	.....	.....	.....	375,752 42
3,999,975 38	18,428 93	1,097 93	1,994 05	75,776 65	1,123 33	6,314,124 77
879,761 36	25,256,633 67
4,879,736 74	18,428 93	1,097 93	1,994 05	75,776 65	1,123 33	31,570,758 44

VII.—COINAGE EXECUTED AT THE MINTS OF THE UNITED

DENOMINATION.	PHILADELPHIA.		SAN FRANCISCO.	
	Pieces.	Value.	Pieces.	Value.
GOLD:				
Double eagles	828	\$16, 560 00	683, 500	\$13, 670, 000 00
Eagles	253, 527	2, 535, 270 00	228, 000	2, 280, 000 00
Half eagles	601, 506	3, 007, 530 00	1, 211, 500	6, 057, 500 00
Three dollars	910	2, 730 00	.....	.....
Quarter eagles	887	2, 217 50	.....	.....
Dollars	12, 205	12, 205 00	.....	.....
Total gold	869, 863	5, 576, 512 50	2, 123, 000	22, 007, 500 00
SILVER:				
Dollars	† 17, 787, 767	† 17, 787, 767 00	1, 497, 000	1, 497, 000 00
Half dollars	6, 130	3, 065 00	.....	.....
Quarter dollars	14, 530	3, 632 50	.....	.....
Dimes	2, 533, 427	253, 342 70	43, 690	4, 369 00
Total silver	20, 341, 854	18, 047, 807 20	1, 540, 690	1, 501, 369 00
MINOR:				
Five cents	1, 476, 490	73, 824 50	.....	.....
Three cents	4, 790	143 70	.....	.....
One cent	11, 765, 384	117, 653 84	.....	.....
Total minor	13, 246, 664	191, 622 04	.....	.....
Total coinage	34, 458, 381	23, 815, 941 74	3, 663, 690	23, 508, 869 00

* Coinage suspended March 8, 1885.

STATES DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1885.

CARSON.*		NEW ORLEANS.		TOTAL.	
Pieces.	Value.	Pieces.	Value.	Pieces.	Value.
9,450	\$189,000 00	.....	.....	693,778	\$13,875,560 00
.....	.....	.....	.....	481,527	4,815,270 00
.....	.....	.....	.....	1,813,006	9,065,030 00
.....	.....	.....	.....	910	2,730 00
.....	.....	.....	.....	887	2,217 50
.....	.....	.....	.....	12,205	12,205 00
9,450	189,000 00	.....	.....	3,002,313	27,773,012 50
228,000	228,000 00	9,185,000	\$9,185,000 00	† 28,697,767	† 28,697,767 00
.....	.....	.....	.....	6,130	3,065 00
.....	.....	.....	.....	14,530	3,632 50
.....	.....	.....	.....	2,577,117	257,711 70
228,000	228,000 00	9,185,000	9,185,000 00	31,295,544	28,962,176 20
.....	.....	.....	.....	1,476,490	73,824 50
.....	.....	.....	.....	4,790	143 70
.....	.....	.....	.....	11,765,384	117,653 84
.....	.....	.....	.....	13,246,664	191,622 04
237,450	417,000 00	9,185,000	9,185,000 00	47,544,521	56,926,810 74

† Includes 1,837 recoined.

VIII.—STANDARD OUNCES IN BARS MANUFACTURED DURING

Description.	MINTS.		
	Philadelphia.	San Francisco.	Carson.
GOLD.			
Fine bars.....	24, 639. 471		
Standard bars.....			
Unparted bars.....			1, 173. 196
Sterling bars.....			
Mint bars.....			
Total gold.....	24, 639. 471		1, 173. 196
SILVER.			
Fine bars.....	17, 055. 35	1, 871, 614. 58	70, 275. 02
Standard bars.....			
Unparted bars.....			17, 053. 44
Sterling bars.....	19, 056. 19		
Mint bars.....			
Total silver.....	36, 111. 54	1, 871, 614. 58	87, 328 46

IX.—VALUE OF BARS MANUFACTURED DURING

Description.	MINTS.		
	Philadelphia.	San Francisco.	Carson.
GOLD.			
Fine bars.....	\$458, 408 76		
Standard bars.....			
Unparted bars.....			\$21, 826 90
Sterling bars.....			
Mint bars.....			
Total gold.....	458, 408 76		21, 826 90
SILVER.			
Fine bars.....	19, 846 23	\$2, 177, 878 78	81, 774 57
Standard bars.....			
Unparted bars.....			19, 844 00
Sterling bars.....	22, 174 47		
Mint bars.....			
Total silver.....	42, 020 70	2, 177, 878 78	101, 618 57

THE CALENDAR YEAR ENDED DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Boisé.	Helena.	Charlotte.	Saint Louis.	
594,560.027						619,199,498
2.114	64,422.897	7,327.276	57,582.794	10,523.160	6,189.112	147,220.549
110,354.006						110,354.006
116,788.409						116,788.409
821,704.556	64,422.897	7,327.276	57,582.794	10,523.160	6,189.112	993,562.462
5,248,883.27						7,207,828.22
25,694.23						25,694.23
257,659.24	15,904.00	1,713.64	65,648.29	1,077.86	5,816.75	364,873.22
1,366.56						20,422.75
120,034.90						120,034.90
5,653,638.20	15,904.00	1,713.64	65,648.29	1,077.86	5,816.75	7,738,853.32

THE CALENDAR YEAR ENDED DECEMBER 31, 1885.

ASSAY OFFICES.						Total.
New York.	Denver.	Boisé.	Helena.	Charlotte.	Saint Louis.	
\$11,061,581.90						\$11,519,990.66
39.33	\$1,198,565.52	\$136,321.42	\$1,071,307.80	\$195,779.72	\$115,146.27	2,738,986.96
2,053,098.79						2,053,098.79
2,172,807.60						2,172,807.60
15,287,527.62	1,198,565.52	136,321.42	1,071,307.80	195,779.72	115,146.27	18,484,884.01
6,107,791.44						8,387,291.02
29,898.73						29,898.73
299,821.66	18,506.46	1,994.05	76,390.73	1,254.23	6,768.58	424,579.71
1,590.18						23,764.65
139,676.97						139,676.97
6,578,778.98	18,506.46	1,994.05	76,390.73	1,254.23	6,768.58	9,005,211.08

X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER DURING CALENDAR YEAR ENDED DECEMBER 31, 1885

[Compiled from monthly statements of the Bureau of Statistics.]

IMPORTS.

Ports.	BULLION.						Total gold and silver bullion.
	Gold.			Silver.			
	Bars.	Other bullion.	Total.	Bars.	Other bullion.	Total.	
NEW YORK.							
January, 1885	\$54, 713	\$37, 041	\$91, 754	\$2, 124	\$9, 696	\$11, 820	\$103, 574
February, 1885.....	435	22, 101	22, 536	.....	9, 160	9, 160	31, 696
March, 1885 .....	.....	18, 750	18, 750	.....	.....	.....	18, 750
April, 1885 .....	.....	12, 756	12, 756	.....	38, 310	38, 310	51, 066
May, 1885	1, 172	27, 940	29, 112	765	16, 500	17, 265	46, 377
June, 1885.....	8, 966	33, 047	42, 013	4, 321	31, 099	35, 420	77, 433
July, 1885	17, 615	11, 253	28, 868	2, 100	13, 200	15, 300	44, 168
August, 1885.....	123, 316	27, 625	150, 941	.....	33, 645	33, 645	184, 586
September, 1885.....	696, 391	24, 032	720, 423	7, 605	27, 000	34, 605	755, 028
October, 1885.....	13, 040	26, 538	39, 578	2, 804	21, 410	24, 214	63, 792
November, 1885	18, 610	21, 652	40, 262	9, 680	13, 400	23, 080	63, 342
December, 1885	2, 733	20, 635	23, 368	408	25, 750	26, 158	49, 526
Total	936, 991	283, 370	1, 220, 361	29, 807	239, 170	268, 977	1, 489, 338
SAN FRANCISCO.							
January, 1885 .....	.....	15, 612	15, 612	.....	84, 436	84, 436	100, 048
February, 1885 .....	.....	29, 570	29, 570	.....	196, 547	196, 547	226, 117
March, 1885 .....	.....	21, 284	21, 284	.....	154, 577	154, 577	175, 861
April, 1885 .....	.....	79, 546	79, 546	.....	106, 739	106, 739	186, 285
May, 1885 .....	.....	25, 192	25, 192	.....	141, 600	141, 600	166, 792
June, 1885.....	.....	30, 614	30, 614	.....	185, 055	185, 055	215, 669
July, 1885 .....	.....	30, 023	30, 023	47, 535	88, 025	135, 560	165, 583
August, 1885 .....	.....	30, 889	30, 889	.....	141, 256	141, 256	172, 145
September, 1885.....	.....	63, 762	63, 762	76, 585	47, 995	124, 580	188, 342
October, 1885 .....	.....	373, 662	373, 662	59, 957	114, 623	174, 580	548, 242
November, 1885 .....	.....	393, 173	393, 173	12, 200	109, 458	121, 658	514, 831
December, 1885 .....	.....	748, 374	748, 374	107, 442	106, 261	213, 703	962, 077
Total .....	.....	1, 841, 701	1, 841, 701	303, 719	1, 476, 572	1, 780, 291	3, 621, 992
ALL OTHER PORTS.							
January, 1885	32, 820	19, 520	52, 340	155, 024	11, 555	166, 579	218, 919
February, 1885.....	36, 348	16, 972	53, 320	109, 996	494	110, 490	163, 810
March, 1885	21, 899	12, 401	34, 300	252, 681	.....	252, 681	286, 981
April, 1885	5, 814	11, 316	17, 130	716, 663	9, 763	726, 426	743, 556
May, 1885	4, 650	4, 000	8, 650	147, 654	11, 351	159, 005	167, 655
June, 1885.....	16, 755	2, 659	19, 414	181, 152	37, 623	218, 775	238, 189
July, 1885	21, 310	8, 977	30, 287	268, 253	21, 010	289, 263	319, 550
August, 1885.....	72, 206	19, 353	91, 559	118, 179	19, 688	137, 867	229, 426
September, 1885.....	150, 344	484	150, 828	96, 733	8, 998	105, 731	256, 559
October, 1885.....	29, 000	12, 623	41, 623	156, 781	16, 426	173, 207	214, 830
November, 1885	41, 371	2, 900	44, 271	138, 392	9, 881	148, 273	192, 544
December, 1885	64, 489	5, 818	70, 307	95, 102	14, 151	109, 253	179, 560
Total	497, 006	117, 023	614, 029	2, 436, 610	160, 940	2, 597, 550	3, 211, 579
Total imports bullion	1, 433, 997	2, 242, 094	3, 676, 091	2, 770, 136	1, 876, 682	4, 646, 818	8, 322, 909

X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—Continued.

IMPORTS—Continued.

Ports.	COIN.						Total gold and silver coin.
	Gold.			Silver.			
	Ameri- can.	Foreign.	Total.	Ameri- can.	Foreign.	Total.	
NEW YORK.							
January, 1885	\$53, 759	\$1,160,025	\$1,213,784	\$30, 902	\$54,995	\$85,897	\$1, 299, 681
February, 1885	144, 961	1,519,000	1,663,961	13, 543	30,652	44,195	1, 708, 156
March, 1885	31, 907	1,588,443	1,620,350	17, 582	108,267	125,849	1, 746, 199
April, 1885	43, 788	119,742	163,530	62, 241	162,985	225,226	388, 756
May, 1885	403, 482	48,410	451,892	66, 157	103,937	170,094	621, 986
June, 1885.....	59, 102	12,549	71,651	85, 776	63,163	148,939	220, 590
July, 1885	67, 684	338,254	405,938	48, 572	118,242	166,814	572, 752
August, 1885	73, 637	62,653	136,290	65, 554	97,914	163,468	299, 758
September, 1885	318, 409	1,211,766	1,530,175	45, 237	115,040	160,277	1, 690, 452
October, 1885	103, 450	250,642	354,092	36, 729	103,619	140,348	494, 440
November, 1885	111, 724	3,687,640	3,799,364	26, 168	21,143	47,311	3, 846, 675
December, 1885... .	150, 653	2,893,299	3,043,952	18, 296	260,063	278,359	3, 322, 311
Total	1, 562, 556	12,892,423	14,454,979	516, 757	1,240,020	1,756,777	16, 211, 756
SAN FRANCISCO.							
January, 1885	19, 800	643,255	663,055	29, 785	219,998	249,783	912, 838
February, 1885	15, 195	67,514	82,709	2, 355	243,511	245,866	328, 575
March, 1885	3, 985	51,040	55,025	500	90,904	91,404	146, 429
April, 1885	3, 450	31,694	35,144	1, 510	158,481	159,991	195, 135
May, 1885	23, 563	13,933	37,496	2, 803	85,108	87,911	125, 407
June, 1885.....	10, 630	44,042	54,672	3, 067	119,638	122,705	177, 377
July, 1885	30, 181	25,194	55,375	1, 083	31,412	32,495	87, 870
August, 1885	42, 546	257,234	299,780	2, 847	163,718	166,565	466, 345
September, 1885	12, 039	495,267	507,306	1, 609	84,636	86,245	593, 551
October, 1885	20, 111	455,051	475,162	3, 246	46,372	49,618	524, 780
November, 1885	3, 539	800,942	804,481	.....	58,328	58,328	862, 809
December, 1885.....	31, 461	1,656,851	1,688,312	5, 999	103,027	109,026	1, 797, 338
Total	216, 500	4,542,017	4,758,517	54, 804	1,405,133	1,459,937	6, 218, 454
ALL OTHER PORTS.							
January, 1885	590	37,788	38,378	375	494,180	494,555	532, 933
February, 1885	1, 263	34,606	35,869	845	396,976	397,821	433, 690
March, 1885	1, 584	5,304	6,888	1, 910	1,209,485	1,211,395	1, 218, 283
April, 1885	469, 479	4,948	474,427	1, 627	680,705	682,332	1, 156, 759
May, 1885	1, 297	11,096	12,393	627	60,742	61,369	73, 762
June, 1885.....	2, 006	9,393	11,399	951	191,968	192,919	204, 318
July, 1885	22, 630	15,291	37,921	38	2,196,547	2,196,585	2, 234, 506
August, 1885 .....	.....	24,448	24,448	1, 160	1,490,750	1,491,910	1, 516, 358
September, 1885	8, 500	5,122	13,622	2, 669	193,858	196,527	210, 149
October, 1885	2, 170	37,524	39,694	2, 705	1,360,557	1,363,262	1, 402, 956
November, 1885	105	14,702	14,807	1, 282	824,649	825,931	840, 738
December, 1885	17, 254	28,624	45,878	5, 527	789,053	794,580	840, 458
Total	526, 878	228,846	755,724	19, 716	9,889,470	9,909,186	10, 664, 910
Total imports coin ...	2, 305, 934	17,663,286	19,969,220	591, 277	12,534,623	13,125,900	33, 095, 120

**X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER
DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—Continued.**

EXPORTS (DOMESTIC).

Customs district.	BULLION.						Total gold and silver.
	Gold.			Silver.			
	United States mint or assay office.	Other bullion.	Total.	United States mint or assay office.	Other bullion.	Total.	
NEW YORK.							
January, 1885	\$1, 000	\$3, 500	\$4, 500	\$118, 300	\$1,115,069	\$1,233,369	\$1, 237, 869
February, 1885		4, 000	4, 000	72, 400	1,029,256	1,101,656	1, 105, 656
March, 1885		7, 000	7, 000	163, 000	598,906	761,906	768, 906
April, 1885		6, 300	6, 300	77, 000	932,216	1,009,216	1, 015, 516
May, 1885		7, 100	7, 100		1,235,891	1,235,891	1, 242, 991
June, 1885		5, 500	5, 500	1, 300	1,524,470	1,525,770	1, 531, 270
July, 1885		8, 600	8, 600		1,527,745	1,527,745	1, 536, 345
August, 1885		6, 400	6, 400		1,044,536	1,044,536	1, 050, 936
September, 1885		8, 750	8, 750		939,533	939,533	948, 283
October, 1885		19, 080	19, 080		656,194	656,194	675, 274
November, 1885		3, 250	3, 250		743,144	743,144	746, 394
December, 1885	598, 737	360	599, 097		1,283,613	1,283,613	1, 882, 710
Total	599, 737	79, 840	679, 577	432, 000	12,630,573	13,062,573	13, 742, 150
SAN FRANCISCO.							
January, 1885		400	400	61, 000	303, 600	364, 600	365, 000
February, 1885		1, 078	1, 078	77, 000	748, 556	825, 556	826, 634
March, 1885		90	90	60, 000	519, 356	579, 356	579, 446
April, 1885		650	650		749, 123	749, 123	749, 773
May, 1885		550	550		286, 341	286, 341	286, 891
June, 1885		1, 562	1, 562	180, 000	790, 000	970, 000	971, 562
July, 1885		2, 609	2, 609		485, 526	485, 526	488, 135
August, 1885		7, 054	7, 054		531, 514	531, 514	538, 568
September, 1885		4, 000	4, 000		674, 240	674, 240	678, 240
October, 1885				57, 007	955, 005	1, 012, 012	1, 012, 012
November, 1885		5, 174	5, 174		750, 046	750, 046	755, 220
December, 1885		2, 364	2, 364	558, 725		558, 725	561, 089
Total		25, 531	25, 531	993, 732	6, 793, 307	7, 787, 039	7, 812, 570
ALL OTHER PORTS.							
January, 1885							
February, 1885							
March, 1885							
April, 1885							
May, 1885							
June, 1885							
July, 1885							
August, 1885							
September, 1885							
October, 1885							
November, 1885							
December, 1885							
Total							
Total bullion (domestic exports)	599, 737	105, 371	705, 108	1, 425, 732	19,423,880	20,849,612	21, 554, 720

**X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER
DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—Continued.**

EXPORTS (DOMESTIC)—Continued.

Customs district.	COIN.						Total gold and silver.
	Gold.			Silver.			
	Ameri- can.	Foreign.	Total.	American.		Total.	
				Trade.	Other.		
NEW YORK.							
January, 1885	\$143, 874	.....	\$143, 874	.....	\$25, 800	\$25, 800	\$169, 674
February, 1885	55, 232	.....	55, 232	.....	500	500	55, 732
March, 1885	105, 509	.....	105, 509	\$440, 100	10, 900	451, 000	556, 509
April, 1885	35, 260	.....	35, 260	186, 000	.....	186, 000	221, 260
May, 1885	98, 490	.....	98, 490	51, 300	14, 400	65, 700	164, 190
June, 1885	106, 709	.....	106, 709	.....	2, 400	2, 400	109, 109
July, 1885	30, 786	.....	30, 786	183, 500	5, 035	188, 535	219, 321
August, 1885	61, 918	.....	61, 918	111, 900	4, 250	116, 150	178, 068
September, 1885	59, 118	.....	59, 118	51, 011	6, 250	57, 261	116, 379
October, 1885	94, 640	.....	94, 640	1, 200	4, 800	6, 000	100, 640
November, 1885	213, 326	.....	213, 326	2, 350	4, 900	7, 250	220, 576
December, 1885	125, 343	.....	125, 343	1, 700	8, 880	10, 580	135, 923
Total	1, 130, 205	.....	1, 130, 205	1, 029, 061	88, 115	1, 117, 176	2, 247, 381
SAN FRANCISCO.							
January, 1885	30, 430	.....	30, 430	.....	.....	.....	30, 430
February, 1885	22, 223	.....	22, 223	.....	.....	.....	22, 223
March, 1885	79, 600	.....	79, 600	.....	.....	.....	79, 600
April, 1885	104, 285	.....	104, 285	.....	.....	.....	104, 285
May, 1885	64, 790	.....	64, 790	.....	.....	.....	64, 790
June, 1885	102, 425	.....	102, 425	.....	.....	.....	102, 425
July, 1885	52, 775	.....	52, 775	.....	.....	.....	52, 775
August, 1885	157, 805	.....	157, 805	.....	2, 500	2, 500	160, 305
September, 1885	57, 990	.....	57, 990	.....	.....	.....	57, 990
October, 1885	25, 000	.....	25, 000	.....	.....	.....	25, 000
November, 1885	81, 837	.....	81, 837	.....	.....	.....	81, 837
December, 1885	125, 713	.....	125, 713	.....	8, 038	8, 038	133, 751
Total	904, 873	.....	904, 873	.....	10, 538	10, 538	915, 411
ALL OTHER PORTS.							
January, 1885 .....	.....	.....	.....	.....	.....	.....	.....
February, 1885 .....	.....	.....	.....	.....	.....	.....	.....
March, 1885 .....	.....	.....	.....	.....	.....	.....	.....
April, 1885 .....	.....	.....	.....	.....	.....	.....	.....
May, 1885 .....	.....	.....	.....	.....	.....	.....	.....
June, 1885	500, 000	.....	500, 000	.....	4, 222	4, 222	504, 222
July, 1885	1, 130, 000	.....	1, 130, 000	.....	.....	.....	1, 130, 000
August, 1885	40	.....	40	.....	7, 580	7, 580	7, 620
September, 1885	1, 500	.....	1, 500	.....	2, 500	2, 500	4, 000
October, 1885 .....	.....	.....	.....	560	140	700	700
November, 1885 .....	.....	.....	.....	.....	.....	.....	.....
December, 1885 .....	.....	.....	.....	.....	.....	.....	.....
Total	1, 631, 540	.....	1, 631, 540	560	14, 442	15, 002	1, 646, 542
Total coin (domestic exports)	3, 666, 618	.....	3, 666, 618	1, 029, 621	113, 095	1, 142, 716	4, 809, 334

X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER BULLION DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—
Continued.

EXPORTS (FOREIGN).

Ports.	BULLION.						Total gold and silver bullion.
	Gold.			Silver.			
	Bars.	Other bullion.	Total.	Bars.	Other bullion.	Total.	
NEW YORK.							
January, 1885.....							
February, 1885.....							
March, 1885.....							
April, 1885.....							
May, 1885.....							
June, 1885.....							
July, 1885.....							
August, 1885.....	\$124, 490		\$124, 490	\$7, 900		\$7, 900	\$132, 390
September, 1885.....	15, 490		15, 490	5, 250		5, 250	20, 740
October, 1885.....							
November, 1885.....							
December, 1885.....		360	360				360
Total.....	139, 980	360	140, 340	13, 150		13, 150	153, 490
SAN FRANCISCO.							
January, 1885.....							
February, 1885.....							
March, 1885.....							
April, 1885.....							
May, 1885.....							
June, 1885.....							
July, 1885.....							
August, 1885.....							
September, 1885.....							
October, 1885.....							
November, 1885.....							
December, 1885.....							
Total.....							
ALL OTHER PORTS.							
January, 1885.....							
February, 1885.....							
March, 1885.....							
April, 1885.....							
May, 1885.....							
June, 1885.....							
July, 1885.....							
August, 1885.....							
September, 1885.....							
October, 1885.....							
November, 1885.....							
December, 1885.....							
Total.....							
Total bullion (foreign exports.....	139, 980	360	140, 340	13, 150		13, 150	153, 490

X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER COIN DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—Continued.

EXPORTS (FOREIGN)—Continued.

Ports.	COIN.		Total gold and silver coin.
	Gold.	Silver.	
NEW YORK.			
January, 1885	\$1, 267, 122	\$90, 915	\$1, 358, 037
February, 1885	1, 550, 995	124, 583	1, 675, 578
March, 1885	640, 883	180, 326	821, 209
April, 1885	1, 011, 500	164, 394	1, 175, 894
May, 1885	1, 223, 045	125, 738	1, 348, 783
June, 1885	25, 796	72, 739	98, 535
July, 1885	104, 800	199, 052	303, 852
August, 1885	1, 610	108, 404	110, 014
September, 1885	4, 720	119, 023	123, 743
October, 1885	400	158, 002	158, 402
November, 1885	131, 435	101, 556	232, 991
December, 1885	937, 097	170, 860	1, 107, 957
Total	6, 899, 403	1, 615, 592	8, 514, 995
SAN FRANCISCO.			
January, 1885		496, 943	496, 943
February, 1885		450, 687	450, 687
March, 1885		1, 127, 665	1, 127, 665
April, 1885		1, 023, 902	1, 023, 902
May, 1885		442, 929	442, 929
June, 1885		1, 033, 716	1, 033, 716
July, 1885		813, 631	813, 631
August, 1885		1, 012, 943	1, 012, 943
September, 1885		788, 313	788, 313
October, 1885		689, 669	689, 669
November, 1885		501, 850	501, 850
December, 1885		1, 162, 017	1, 162, 017
Total		9, 544, 265	9, 544, 265
ALL OTHER PORTS.			
January, 1885		17, 000	17, 000
February, 1885	2, 300	4, 500	6, 800
March, 1885		18, 586	18, 586
April, 1885		4, 920	4, 920
May, 1885		3, 250	3, 250
June, 1885		7, 500	7, 500
July, 1885		1, 555	1, 555
August, 1885		19, 770	19, 770
September, 1885		19, 723	19, 723
October, 1885		2, 246	2, 246
November, 1885		6, 307	6, 307
December, 1885	3, 438	9, 850	13, 288
Total	5, 738	115, 207	120, 945
Total coin (foreign exports)	6, 905, 141	11, 275, 064	18, 180, 205

**X.—STATEMENT OF MANIFESTED IMPORTS AND EXPORTS OF GOLD AND SILVER
DURING CALENDAR YEAR ENDED DECEMBER 31, 1885—Continued.**

RECAPITULATION.

Description.	Gold.	Silver.	Total.
IMPORTS.			
Bullion	\$3, 676, 091	\$4, 646, 818	\$8, 322, 909
Foreign coin	17, 663, 286	12, 534, 623	30, 197, 909
Total	21, 339, 377	17, 181, 441	38, 520, 818
American coin	2, 305, 934	591, 277	2, 897, 211
Total bullion and coin	23, 645, 311	17, 772, 718	41, 418, 029
EXPORTS.			
Domestic bullion	\$705, 108	\$20, 849, 612	\$21, 554, 720
Foreign bullion	140, 340	13, 150	153, 490
Foreign coin	6, 905, 141	11, 275, 064	18, 180, 205
Total	7, 750, 589	32, 127, 826	39, 888, 415
American coin	3, 666, 618	*1, 142, 716	*4, 809, 334
Total bullion and coin	11, 417, 207	33, 280, 542	44, 697, 749
EXCESS.			
Bullion and foreign coin :			
Imports, excess	\$13, 588, 788		
Exports, excess		\$14, 956, 385	\$1, 367, 597
American coin :			
Exports, excess	1, 360, 684	551, 439	1, 912, 123

* Includes 1,029,621 trade dollars.

XI.—STATEMENT SHOWING THE NUMBER OF OUNCES, STANDARD WEIGHT, OF GOLD AND SILVER BULLION OPERATED UPON IN THE REFINERIES OF THE UNITED STATES MINTS AT PHILADELPHIA, SAN FRANCISCO, AND CARSON, AND THE ASSAY OFFICE AT NEW YORK.

[Sent to refineries.]

Month.	MINT AT PHILADELPHIA.			MINT AT SAN FRANCISCO.		
	Bullion containing gold.		Bullion free from gold.	Bullion containing gold.		Bullion free from gold.
	Gold, standard weight.	Silver, standard weight.	Silver, standard weight.	Gold, standard weight.	Silver, standard weight.	Silver, standard weight.
January, 1885	11, 576. 700	15, 230. 74	18, 639. 71	25, 776. 165	232, 104. 01	17, 117. 49
February, 1885	10, 726. 410	7, 068. 40	25, 025. 31	25, 682. 671	189, 317. 97	112, 911. 53
March, 1885	11, 812. 050	7, 950. 80	32, 576. 50	33, 001. 210	190, 789. 71	12, 082. 20
April, 1885	10, 798. 360	11, 019. 28	22, 158. 62	30, 101. 060	115, 196. 57	13, 368. 09
May, 1885	12, 097. 360	10, 980. 33	37, 257. 53	33, 589. 150	146, 195. 73	8, 280. 13
June, 1885	11, 994. 000	10, 465. 15	19, 876. 13	23, 026. 083	64, 730. 27	12, 442. 02
July, 1885	12, 827. 130	26, 996. 38	11, 943. 74	.....	.....	.....
August, 1885	12, 514. 690	9, 740. 54	28, 895. 49	52, 584. 673	429, 055. 13	56, 266. 20
September, 1885	10, 042. 490	4, 065. 14	26, 387. 87	34, 903. 467	74, 998. 66	28, 105. 20
October, 1885	13, 407. 250	11, 326. 50	25, 794. 48	43, 506. 289	183, 037. 32	15, 809. 39
November, 1885	6, 369. 340	9, 224. 19	13, 541. 67	43, 399. 651	181, 504. 63	46, 092. 47
December, 1885	11, 762. 580	25, 980. 74	10, 222. 57	28, 899. 484	37, 478. 11	6, 258. 20
Total	135, 928. 360	150, 048. 19	272, 319. 62 150, 048. 19	374, 469. 903	1, 844, 408. 11	328, 732. 92 1, 844, 408. 11
Total silver .....	.....	.....	422, 367. 81	.....	.....	2, 173, 141. 03

Month.	MINT AT CARSON.			ASSAY OFFICE AT NEW YORK.		
	Bullion containing gold.		Bullion free from gold.	Bullion containing gold.		Bullion free from gold.
	Gold, standard weight.	Silver, standard weight.	Silver, standard weight.	Gold, standard weight.	Silver, standard weight.	Silver, standard weight.
January, 1885	6, 035. 961	97, 357. 38	.....	44, 487. 000	501, 503. 00	15, 790. 00
February, 1885	8, 576. 606	123, 537. 84	.....	34, 941. 000	290, 675. 00	5, 361. 00
March, 1885	1, 681. 107	23, 877. 53	.....	40, 652. 000	524, 107. 00	7, 272. 00
April, 1885	3, 915. 341	40, 195. 67	.....	35, 018. 000	426, 655. 00	24, 894. 00
May, 1885 .....	.....	.....	.....	71, 165. 000	305, 409. 00	29, 012. 00
June, 1885 .....	.....	.....	.....	.....	.....	.....
July, 1885 .....	.....	.....	.....	97, 175. 000	618, 581. 00	40, 993. 00
August, 1885 .....	.....	.....	.....	42, 573. 000	265, 581. 00	37, 264. 00
September, 1885 .....	.....	.....	.....	65, 952. 000	242, 997. 00	72, 881. 00
October, 1885 .....	.....	.....	.....	51, 970. 000	204, 588. 00	141, 160. 00
November, 1885 .....	.....	.....	.....	53, 865. 000	188, 286. 00	65, 658. 00
December, 1885 .....	.....	.....	.....	43, 999. 000	162, 328. 00	76, 368. 00
Total	20, 209. 015	284, 968. 42	..... 284, 968. 42	581, 797. 000	3, 730, 710. 00	516, 653. 00 3, 730, 710. 00
Total silver .....	.....	.....	284, 968. 42	.....	.....	4, 247, 363. 00

RECAPITULATION.

Calendar year 1885.	Bullion containing gold.		Bullion free from gold.
	Gold, standard weight.	Silver, standard weight.	Silver, standard weight.
Mint at Philadelphia	135, 928. 360	150, 048. 19	272, 319. 62
Mint at San Francisco	374, 469. 903	1, 844, 408. 11	328, 732. 92
Mint at Carson	20, 209. 015	284, 968. 42	.....
Assay office at New York	581, 797. 000	3, 730, 710. 00	516, 653. 00
Total	1, 112, 404. 278	6, 010, 134. 72	1, 117, 705. 54 6, 010, 134. 72
Total silver .....	.....	.....	7, 127, 840. 26

XII.—STATEMENT SHOWING THE IMPORTS INTO AND EXPORTS FROM THE CUSTOMS DISTRICT OF SAN FRANCISCO, CAL., OF GOLD AND SILVER COIN AND BULLION DURING THE YEAR ENDING DECEMBER 31, 1885.

IMPORTS.

Countries from which imported and to which exported.	GOLD.		SILVER.		Total gold and silver.
	Bullion.	Coin.	Bullion.	Coin.	
Central American States.....	\$2, 256	\$16, 114	.....	\$17, 414	\$35, 784
China .....	.....	.....	.....	2, 366	2, 366
French Possessions .....	.....	3, 897	.....	59, 306	63, 203
British Columbia.....	444, 285	105, 433	.....	.....	549, 718
British Possessions in Austral- asia	1, 324, 089	4, 046, 290	.....	.....	5, 370, 379
Hawaiian Islands.....	.....	66, 713	.....	47, 574	114, 287
Japan .....	.....	402, 060	.....	11, 108	413, 168
Mexico.....	71, 071	98, 470	\$1, 780, 291	1, 304, 325	3, 254, 157
Peru .....	.....	13, 000	.....	17, 844	30, 844
United States of Colombia .....	.....	6, 540	.....	.....	6, 540
Total.....	1, 841, 701	4, 758, 517	1, 780, 291	1, 459, 937	9, 840, 446

EXPORTS.

	DOMESTIC.					Foreign silver coin.	Total do- mestic and for- eign gold and silver
	GOLD.		SILVER.				
	Bullion.	Coin.	Bullion.	Coin.			
				Trade.	Other.		
Central American States	\$24, 845	.....	.....	\$10, 538	.....	\$35, 38
China.....	\$230, 000	.....	.....	.....	230, 00
British East Indies	2, 472, 830	.....	.....	\$476, 000	2, 948, 83
Hong-Kong.....	\$25, 531	281, 828	3, 500, 969	.....	.....	8, 638, 830	12, 447, 15
British Possessions in Aus- traliasia	6, 240	6, 24
Hawaiian Islands.....	592, 800	25, 000	.....	.....	.....	617, 80
Japan	1, 558, 240	.....	.....	423, 195	1, 981, 43
Mexico	400	.....	.....	.....	.....	40
United States of Colombia...	5, 000	.....	.....	.....	.....	5, 00
Total	25, 531	904, 873	7, 787, 039	.....	10, 538	9, 544, 265	18, 272, 24

XIII.—AVERAGE MONTHLY PRICE OF SILVER BULLION, 925 THOUSANDTHS FINE AND EQUIVALENT PER OUNCE 1000 FINE IN UNITED STATES MONEY, IN LONDON DURING THE CALENDAR YEAR 1885, COMPILED FROM DAILY TELEGRAPHIC CABLE DISPATCHES TO THE BUREAU OF THE MINT.

Months.	Highest.	Lowest.	Average.	Equivalent in United States money.
	<i>Pence.</i>	<i>Pence.</i>	<i>Pence.</i>	<i>Per ounce fine.</i>
January	50	49 $\frac{3}{8}$	49.649	\$1.09089
February	49 $\frac{7}{8}$	48 $\frac{1}{2}$	49.172	1.07504
March	49 $\frac{3}{8}$	49	49.067	1.07610
April	49 $\frac{7}{8}$	48 $\frac{7}{8}$	49.164	1.08299
May	50.00	48 $\frac{1}{2}$ $\frac{5}{8}$	49.235	1.08915
June	49 $\frac{1}{2}$	49	49.154	1.07818
July	49 $\frac{1}{2}$	49 $\frac{1}{8}$	49.198	1.07769
August	49 $\frac{3}{8}$	48 $\frac{7}{8}$ $\frac{5}{8}$	48.841	1.07037
September	48 $\frac{3}{8}$	47 $\frac{1}{2}$	47.623	1.04083
October	47 $\frac{9}{8}$	47 $\frac{1}{2}$	47.428	1.03879
November	47 $\frac{1}{2}$	47 $\frac{5}{8}$ $\frac{5}{8}$	47.420	1.03578
December	47 $\frac{1}{2}$	46 $\frac{7}{8}$	47.125	1.03313
Average for the year	48.927	48.348	48.590	1.065745

XIV.—STATEMENT SHOWING THE STANDARD OUNCES OF SILVER BULLION PURCHASED AT COINAGE MINTS DURING THE CALENDAR YEAR 1885 AND COINING VALUE OF THE SAME.

Mints.	Standard ounces.	Coining value.
Philadelphia	15,302,269.43	\$17,806,277 16
San Francisco	245,185.14	285,306 34
Carson	372,273.81	433,191 34
New Orleans	8,465,440.14	9,850,693 98
Total	24,385,168.52	28,375,468 82

XV.—STATEMENT OF SILVER BULLION

Month.	PHILADELPHIA.		SAN FRANCISCO.	
	Standard ounces.	Cost.	Standard ounces.	Cost.
January	1, 169, 452. 26	\$1, 144, 624 47	30, 969. 58	\$29, 924 47
February	785, 614. 99	761, 804 52	41, 312. 75	39, 651 43
March	1, 280, 844. 51	1, 238, 138 60	46, 843. 09	45, 423 37
April	1, 207, 518. 35	1, 171, 293 44	30, 820. 21	29, 532 78
May	1, 118, 100. 35	1, 094, 898 03	28, 083. 39	27, 050 42
June	808, 678. 71	781, 114 96	28, 549. 06	27, 646 67
July	1, 340, 367. 87	1, 294, 246 54	.....	.....
August	1, 783, 572. 41	1, 720, 443 41	9, 018. 34	8, 624 35
September	1, 144, 769. 66	1, 079, 129 88	7, 800. 61	7, 247 11
October	1, 907, 021. 66	1, 809, 682 03	7, 542. 12	6, 792 71
November	1, 048, 770. 33	975, 198 23	7, 913. 83	7, 130 18
December	1, 707, 558. 33	1, 587, 932 91	6, 332. 16	5, 851 39
Total	15, 302, 269. 43	14, 658, 507 02	245, 185. 14	234, 874 88

XVI.—STATEMENT OF SILVER CONSUMED IN

Month.	CONSUMED IN COINAGE.	
	Standard ounces.	Cost.
January	2, 049, 781. 26	\$2, 014, 064 00
February	1, 976, 562. 50	1, 934, 354 56
March	2, 105, 640. 63	2, 051, 009 24
April	2, 071, 093. 75	2, 013, 638 86
May	2, 062, 500. 00	2, 009, 176 08
June	2, 041, 144. 52	1, 984, 383 03
July	1, 632, 812. 50	1, 582, 571 32
August	2, 126, 953. 12	2, 057, 566 18
September	2, 148, 480. 47	2, 055, 758 34
October	2, 148, 437. 50	2, 043, 143 34
November	2, 148, 437. 50	2, 029, 223 44
December	2, 148, 721. 09	2, 013, 677 70
Total	24, 660, 564. 34	23, 788, 566 09

PURCHASES FROM JANUARY 1, 1885, TO DECEMBER 31, 1885.

CARSON.		NEW ORLEANS.		TOTAL.	
Standard ounces.	Cost.	Standard ounces.	Cost.	Standard ounces.	Cost.
72, 547. 11	\$69, 810 54	731, 688. 29	\$715, 631 04	2, 004, 657. 24	\$1, 959, 990 52
69, 680. 07	66, 908 44	696, 185. 17	672, 802 34	1, 592, 792. 98	1, 541, 166 73
49, 491. 51	47, 295 74	886, 976. 92	855, 954 56	2, 264, 156. 03	2, 186, 812 27
139, 438. 91	132, 744 41	989, 680. 83	958, 634 88	2, 367, 458. 30	2, 292, 205 51
40, 344. 06	39, 044 57	735, 249. 60	718, 028 15	1, 921, 777. 40	1, 879, 021 17
542. 57	535 53	429, 127. 10	415, 326 94	1, 266, 897. 44	1, 224, 624 10
107. 34	103 25	396, 091. 56	382, 288 04	1, 736, 566. 77	1, 676, 637 83
35. 84	34 21	129, 236. 85	123, 261 54	1, 921, 863. 44	1, 852, 363 51
11. 60	11 36	880, 197. 72	827, 848 75	2, 032, 779. 59	1, 914, 237 10
5. 08	4 58	699, 273. 32	651, 532 90	2, 613, 842. 18	2, 468, 012 22
69. 72	69 72	961, 580. 19	894, 236 48	2, 018, 334. 07	1, 876, 634 61
-----	-----	930, 152. 59	861, 620 38	2, 644, 043. 08	2, 455, 404 68
372, 273. 81	356, 562 35	8, 465, 440. 14	8, 077, 166 00	24, 385, 168. 52	23, 327, 110 25

COINAGE, &C., FROM JANUARY 1, 1885, TO DECEMBER 31, 1885.

WASTAGE AND SOLD IN SWEEPS.		TOTAL DISPOSED OF.		Standard silver dollars coined.
Standard ounces.	Cost.	Standard ounces.	Cost.	
2, 148. 83	\$2, 148 83	2, 051, 930. 09	\$2, 016, 212 83	\$2, 385, 200 00
-----	-----	1, 976, 562. 50	1, 934, 354 56	2, 300, 000 00
3, 755. 64	3, 755 64	2, 109, 396. 27	2, 054, 764 88	2, 450, 200 00
290. 41	290 41	2, 071, 384. 16	2, 013, 929 27	2, 410, 000 00
499. 86	499 86	2, 062, 999. 86	2, 009, 675 94	2, 400, 000 00
25, 266. 62	24, 703 94	2, 066, 411. 14	2, 009, 086 97	2, 375, 150 00
1, 688. 81	1, 688 81	1, 634, 501. 31	1, 584, 260 13	1, 900, 000 00
394. 27	382 12	2, 127, 347. 39	2, 057, 948 30	2, 475, 000 00
9, 283. 36	8, 983 84	2, 157, 763. 83	2, 064, 742 18	2, 500, 050 00
-----	-----	2, 148, 437. 50	2, 043, 143 34	2, 500, 000 00
-----	-----	2, 148, 437. 50	2, 029, 223 44	2, 500, 000 00
5, 007. 75	4, 939 83	2, 153, 728. 84	2, 018, 617 53	2, 500, 330 00
48, 335. 55	47, 393 28	24, 708, 900. 39	23, 835, 959 37	28, 695, 930 00

XVII.—STATEMENT OF BULLION MANUFACTURED INTO STANDARD SILVER DOLLARS,
FROM JANUARY 1, 1885,
MINT AT PHILADELPHIA.

Month.	Manufactured.	
	Standard ounces.	Cost.
January.....	846,656.26	\$831,871 95
February.....	773,437.50	757,022 75
March.....	1,117,359.38	1,088,226 60
April.....	1,203,125.00	1,169,984 77
May.....	1,203,125.00	1,172,838 84
June.....	1,203,253.90	1,169,869 85
July.....	1,546,875.00	1,499,174 71
August.....	1,546,875.00	1,495,185 07
September.....	1,460,980.47	1,397,717 30
October.....	1,460,937.50	1,390,920 77
November.....	1,460,937.50	1,382,213 06
December.....	1,461,221.09	1,370,279 67
Total.....	15,284,783.60	14,725,305 34

MINT AT SAN FRANCISCO.

January.....	429,687.50	\$420,491 07
February.....	429,687.50	420,092 84
March.....	171,875.00	167,896 19
April.....	85,937.50	83,791 34
May.....	85,937.50	83,680 32
June.....	42,968.75	41,807 32
July.....		
August.....	40,390.62	39,261 23
September.....		
October.....		
November.....		
December.....		
Total.....	1,286,484.37	1,257,020 31

MINT AT CARSON CITY.

January.....	85,937.50	\$84,441 53
February.....	85,937.50	84,196 71
March.....		
April.....		
May.....		
June.....		
July.....		
August.....	24,062.50	23,381 71
September.....		
October.....		
November.....		
December.....		
Total.....	195,937.50	192,019 95

MINT AT NEW ORLEANS.

January.....	687,500.00	\$677,259 45
February.....	687,500.00	673,042 26
March.....	816,406.25	794,886 45
April.....	782,031.25	759,862 75
May.....	773,437.50	752,656 92
June.....	794,921.87	772,705 86
July.....	85,937.50	83,396 61
August.....	515,625.00	499,738 17
September.....	687,500.00	658,041 04
October.....	687,500.00	652,222 57
November.....	687,500.00	647,010 38
December.....	687,500.00	643,393 03
Total.....	7,893,359.37	7,614,220 49

AND INCIDENTAL WASTAGE AND LOSS ON SALE OF SWEEPS AT THE COINAGE MINTS,
TO DECEMBER 31, 1885.

MINT AT PHILADELPHIA.

Wastage and gold in sweeps.		Total consumption.		Number of standard silver dollars coined.	Seignorage.
Standard ounces.	Cost.	Standard ounces.	Cost.		
2, 148. 83	\$2, 148 83	848, 805. 09	\$834, 020 78	985, 200	\$153, 328 05
.....	.....	773, 437. 50	757, 022 75	900, 000	142, 977 25
3, 755. 64	3, 755 64	1, 121, 115. 02	1, 091, 982 24	1, 300, 200	211, 973 40
.....	.....	1, 203, 125. 00	1, 169, 984 77	1, 400, 000	230, 015 23
499. 86	499 86	1, 203, 624. 86	1, 173, 338 70	1, 400, 000	227, 161 16
4, 930. 50	4, 930 50	1, 208, 184. 40	1, 174, 800 35	1, 400, 150	230, 280 15
1, 688. 81	1, 688 81	1, 548, 563. 81	1, 500, 863 52	1, 800, 000	300, 825 29
.....	.....	1, 546, 875. 00	1, 495, 185 07	1, 800, 000	304, 814 93
2, 293. 42	2, 293 42	1, 463, 273. 89	1, 400, 010 72	1, 700, 050	302, 332 70
.....	.....	1, 460, 937. 50	1, 390, 920 77	1, 700, 000	309, 079 23
.....	.....	1, 460, 937. 50	1, 382, 213 06	1, 700, 000	317, 786 94
2, 767. 46	2, 767 46	1, 462, 988. 55	1, 373, 047 13	1, 700, 230	330, 050 33
18, 084. 52	18, 084 52	15, 302, 868. 12	14, 743, 389 86	17, 785, 930	3, 060, 624 66

MINT AT SAN FRANCISCO.

.....	.....	429, 687. 50	\$420, 491 07	500, 000	\$79, 508 93
.....	.....	429, 687. 50	420, 092 84	500, 000	79, 907 16
.....	.....	171, 875. 00	167, 896 19	200, 000	32, 103 81
.....	.....	85, 937. 50	83, 791 34	100, 000	16, 208 66
.....	.....	85, 937. 50	83, 680 32	100, 000	16, 319 68
4, 265. 08	\$4, 149 80	47, 233. 83	45, 957 12	50, 000	8, 192 68
.....	.....	40, 390. 62	39, 261 23	47, 000	7, 738 77
.....
744. 51	718 91	744. 51	718 91	.....	.....
5, 009. 59	4, 868 71	1, 291, 493. 96	1, 261, 589 02	1, 497, 000	239, 979 69

MINT AT CARSON CITY.

.....	.....	85, 937. 50	\$84, 441 53	100, 000	\$15, 558 47
.....	.....	85, 937. 50	84, 196 71	100, 000	15, 803 29
290. 41	\$290 41	290. 41	290 41	.....	.....
62. 53	62 53	62. 53	62 53	.....	.....
.....	.....	24, 062. 50	23, 381 71	28, 000	4, 618 29
.....
1, 495. 78	1, 453 46	1, 495. 78	1, 453 46	.....	.....
1, 848. 72	1, 806 40	197, 786. 22	193, 826 35	228, 000	35, 980 05

MINT AT NEW ORLEANS.

.....	.....	687, 500. 00	\$677, 259 45	800, 000	\$122, 740 55
.....	.....	687, 500. 00	673, 042 26	800, 000	126, 957 74
.....	.....	816, 406. 25	794, 886 45	950, 000	155, 113 55
.....	.....	782, 031. 25	759, 862 75	910, 000	150, 137 25
.....	.....	773, 437. 50	752, 656 92	900, 000	147, 343 08
16, 008 51	\$15, 561 11	810, 930. 38	738, 266 97	925, 000	152, 294 14
.....	.....	85, 937. 50	83, 396 61	100, 000	16, 603 39
394. 27	382 12	516, 009. 27	500, 120 29	600, 000	100, 261 83
6, 989. 94	6, 690 42	694, 489. 94	664, 731 46	800, 000	141, 958 96
.....	.....	687, 500. 00	652, 222 57	800, 000	147, 777 43
.....	.....	687, 500. 00	647, 010 38	800, 000	152, 989 62
.....	.....	687, 500. 00	643, 398 03	800, 000	156, 601 97
23, 392. 72	22, 633 65	7, 916, 707. 54	7, 636, 854 14	9, 185, 000	1, 570, 779 51

XVIII.—STATEMENT SHOWING THE ASSETS AND LIABILITIES OF THE UNITED STATES MINT.
ASSETS DECEMBER 31, 1885.

Institutions.	GOLD BULLION.		SILVER BULLION.	
	Standard weight.	Value.	Standard weight.	Value (cost).
COINAGE MINTS.				
	<i>Ounces.</i>		<i>Ounces.</i>	
Philadelphia	1, 304, 149. 002	\$24, 263, 237 11	1, 895, 817. 28	\$1, 793, 189 44
San Francisco.....	251, 591. 208	4, 680, 766 67	151, 481. 50	145, 561 36
Carson.....				
New Orleans	22, 223. 027	413, 451 66	1, 929, 727. 25	1, 805, 938 48
ASSAY OFFICES.				
New York	2, 336, 439. 595	43, 468, 643 41	868, 456. 97	867, 677 97
Denver.....	3, 766. 862	70, 081 15	946. 55	851 90
Helena	966. 707	17, 985 25	290. 42	261 38
Boisé.....	471. 958	8, 780 87	90. 33	81 34
Charlotte	241. 197	4, 487 32	29. 59	26 65
Saint Louis.....	579. 887	10, 788 34	270. 87	243 75
Total.....	3, 920, 429. 443	72, 938, 221 78	4, 847, 110. 76	4, 613, 832 27

LIABILITIES.

Institutions.	Bullion fund.
COINAGE MINTS.	
Philadelphia.....	\$47,849,983 50
San Francisco	26,144,603 53
Carson.....	84,987 69
New Orleans.....	1,377,407 12
ASSAY OFFICES.	
New York.....	47,818,509 96
Denver	107,465 11
Helena.....	96,809 02
Boisé	25,000 00
Charlotte	11,420 58
Saint Louis	28,286 62
Total.	123,544,473 31

ITIES OF UNITED STATES MINTS AND ASSAY OFFICES.

ASSETS DECEMBER 31, 1885.

Value of bullion shipped for coinage.	Gold coin.	Silver coin.	Minor coin.	Minor coin- age metal.	Old deficien- cies brought forward.	Total.
.....	\$2,545,295 00	\$20,031,687 68	\$4,003 97	\$46,220 15	.....	\$48,683,633 35
.....	443,615 00	20,505,665 06	.....	.....	\$413,557 96	26,189,166 05
.....	92,795 00	642 36	.....	.....	.....	93,437 36
.....	20,700 00	238,421 14	.....	.....	.....	2,478,511 28
.....	3,863,247 39	.....	.....	.....	.....	48,199,568 77
.....	38,259 00	30	.....	.....	.....	109,192 35
\$40,545 78	38,360 58	.....	.....	.....	.....	97,152 99
.....	16,220 76	.....	.....	.....	.....	25,082 97
.....	7,027 74	.....	.....	.....	.....	11,541 71
.....	17,556 20	.....	.....	.....	.....	28,588 29
40,545 78	7,083,076 67	40,776,416 54	4,003 97	46,220 15	413,557 96	125,915,875 12

LIABILITIES.

Undeposited earnings.	Seignorage on silver.	Unpaid depositors.	Minor coin profits.	Minor coin metal fund.	Total.
.....	\$778,847 83	\$4,647 90	\$154 12	\$50,000	\$48,683,633 35
.....	27,902 66	16,659 86	.....	.....	26,189,166 05
\$149 53	8,300 14	.....	.....	.....	93,437 36
160 54	685,866 49	415,077 13	.....	.....	2,478,511 28
41,728 13	.....	339,330 68	.....	.....	48,199,568 77
1,727 24	.....	.....	.....	.....	109,192 35
343 79	.....	.....	.....	.....	97,152 99
82 97	.....	.....	.....	.....	25,082 97
121 13	.....	.....	.....	.....	11,541 71
301 67	.....	.....	.....	.....	28,588 29
44,615 00	1,500,917 12	775,715 57	154 12	50,000	125,915,875 12

XIX.—UNREFINED GOLD AND SILVER OF DOMESTIC PRODUCTION, WITH THE STATES AND TERRITORIES PRODUCING THE SAME, AND REFINED DOMESTIC BULLION NOT DISTRIBUTED, DEPOSITED AT THE MINTS AND ASSAY OFFICES FROM THEIR ORGANIZATION TO THE CLOSE OF THE CALENDAR YEAR ENDED DECEMBER 31, 1885.

Locality.	Gold.	Silver.	Total.
Alabama	\$226,081 75	\$56 26	\$226,138 01
Alaska	256,977 23	2,108 57	259,085 80
Arizona	3,841,093 59	13,421,591 68	17,262,685 27
California	737,583,158 71	3,870,857 29	741,454,016 00
Colorado	49,088,247 61	23,637,667 51	72,725,915 12
Dakota	24,693,326 21	342,032 23	25,035,358 44
Georgia	8,342,721 57	3,191 41	* 8,345,912 98
Idaho	27,973,395 71	1,391,732 18	29,365,127 89
Maine	5,638 20	22 02	5,660 22
Maryland	1,539 20	2 37	1,541 57
Michigan	13,443 22	3,611,417 52	3,624,860 74
Missouri	13 90	359 11	373 01
Montana	57,141,323 33	13,065,466 86	70,206,810 19
Nebraska	494 66	273,208 96	273,703 62
Nevada	23,138,912 85	92,504,990 54	115,643,903 39
New Mexico	2,354,186 96	5,085,651 47	7,439,838 43
North Carolina	11,040,628 78	48,873 58	11,089,502 36
Oregon	18,601,272 67	59,036 88	18,660,309 55
South Carolina	1,582,577 35	1,129 24	1,583,706 59
Tennessee	87,528 30	8 79	87,537 09
Texas .....	.....	102 34	102 34
Utah	767,312 70	18,972,996 94	19,740,309 64
Vermont	78,489 66	84 36	78,574 02
Virginia	1,714,603 96	180 45	1,714,784 41
Washington Territory	383,106 02	1,655 44	384,761 46
Wyoming	752,572 94	11,964 26	764,542 30
Other sources	37,143,737 41	41,723,153 29	78,866,890 70
Total unrefined	1,006,812,389 59	218,029,561 55	1,224,841,951 14
Refined bullion	279,727,593 67	152,470,409 09	432,198,002 76
Grand total	1,286,539,983 26	370,499,970 64	1,657,039,953 90

XX.—PRODUCTION OF GOLD AND SILVER IN THE UNITED STATES FROM THE ORGANIZATION OF THE MINT, IN 1792, TO 1844, AND ANNUALLY SINCE.

[The estimate from 1792 to 1873, inclusive, is by R. W. Raymond, Commissioner, and since by the Director of the Mint.]

Years.	Gold.	Silver.	Total.
Apr. 2, 1792–July 31, 1834.....	\$14, 000, 000	Insignificant.	\$14, 000, 000
July 31, 1834–Dec. 31, 1844.....	7, 500, 000	\$250, 000	7, 750, 000
1845.....	1, 008, 327	50, 000	1, 058, 327
1846.....	1, 139, 357	50, 000	1, 189, 357
1847.....	889, 085	50, 000	939, 085
1848.....	10, 000, 000	50, 000	10, 050, 000
1849.....	40, 000, 000	50, 000	40, 050, 000
1850.....	50, 000, 000	50, 000	50, 050, 000
1851.....	55, 000, 000	50, 000	55, 050, 000
1852.....	60, 000, 000	50, 000	60, 050, 000
1853.....	65, 000, 000	50, 000	65, 050, 000
1854.....	60, 000, 000	50, 000	60, 050, 000
1855.....	55, 000, 000	50, 000	55, 050, 000
1856.....	55, 000, 000	50, 000	55, 050, 000
1857.....	55, 000, 000	50, 000	55, 050, 000
1858.....	50, 000, 000	500, 000	50, 500, 000
1859.....	50, 000, 000	100, 000	50, 100, 000
1860.....	46, 000, 000	150, 000	46, 150, 000
1861.....	43, 000, 000	2, 000, 000	45, 000, 000
1862.....	39, 200, 000	4, 500, 000	43, 700, 000
1863.....	40, 000, 000	8, 500, 000	48, 500, 000
1864.....	46, 100, 000	11, 000, 000	57, 100, 000
1865.....	53, 225, 000	11, 250, 000	64, 475, 000
1866.....	53, 500, 000	10, 000, 000	63, 500, 000
1867.....	51, 725, 000	13, 500, 000	65, 225, 000
1868.....	48, 000, 000	12, 000, 000	60, 000, 000
1869.....	49, 500, 000	12, 000, 000	61, 500, 000
1870.....	50, 000, 000	16, 000, 000	66, 000, 000
1871.....	43, 500, 000	23, 000, 000	66, 500, 000
1872.....	36, 000, 000	28, 750, 000	64, 750, 000
1873.....	36, 000, 000	35, 750, 000	71, 750, 000
1874.....	33, 500, 000	37, 300, 000	70, 800, 000
1875.....	33, 400, 000	31, 700, 000	65, 100, 000
1876.....	39, 900, 000	38, 800, 000	78, 700, 000
1877.....	46, 900, 000	39, 800, 000	86, 700, 000
1878.....	51, 200, 000	45, 200, 000	96, 400, 000
1879.....	38, 900, 000	40, 800, 000	79, 700, 000
1880.....	36, 000, 000	39, 200, 000	75, 200, 000
1881.....	34, 700, 000	43, 000, 000	77, 700, 000
1882.....	32, 500, 000	46, 800, 000	79, 300, 000
1883.....	30, 000, 000	46, 200, 000	76, 200, 000
1884.....	30, 800, 000	48, 800, 000	79, 600, 000
1885.....	31, 800, 000	51, 600, 000	83, 400, 000
Total.....	1, 704, 886, 769	699, 100, 000	2, 403, 986, 769

XXI.—* STATEMENT OF COINAGE OF THE MINTS OF THE UNITED

[Coinage of the mint at Philadelphia from

Period.	GOLD COINAGE.					
	Double eagles.	Eagles.	Half eagles.	Three dollars.	Quarter eagles.	Dollars.
1793-1795.....		\$27, 950	\$43, 535			
1796.....		69, 340	30, 980		\$2, 407 50	
1797.....		83, 230	18, 045		2, 147 50	
1798.....		79, 740	124, 335		1, 535 00	
1799.....		174, 830	37, 255		1, 200 00	
1800.....		259, 650	58, 110			
1801.....		292, 540	130, 030			
1802.....		150, 900	265, 880		6, 530 00	
1803.....		89, 790	167, 530		1, 057 50	
1804.....		97, 950	152, 375		8, 317 50	
1805.....			165, 915		4, 452 50	
1806.....			320, 465		4, 040 00	
1807.....			420, 465		17, 030 00	
1808.....			277, 890		6, 775 00	
1809.....			169, 375			
1810.....			501, 435			
1811.....			497, 905			
1812.....			290, 435			
1813.....			477, 140			
1814.....			77, 270			
1815.....			3, 175			
1816.....						
1817.....						
1818.....			242, 940			
1819.....			258, 615			
1820.....			1, 319, 030			
1821.....			173, 205		16, 120 00	
1822.....			88, 980			
1823.....			72, 425			
1824.....			86, 700		6, 500 00	
1825.....			145, 300		11, 085 00	
1826.....			90, 345		1, 900 00	
1827.....			124, 565		7, 000 00	
1828.....			140, 145			
1829.....			287, 210		8, 507 50	
1830.....			631, 755		11, 350 00	
1831.....			702, 970		11, 300 00	
1832.....			787, 435		11, 000 00	
1833.....			968, 150		10, 400 00	
1834.....			3, 660, 845		293, 425 00	
1835.....			1, 857, 670		328, 505 00	
1836.....			2, 765, 735		1, 369, 965 00	
1837.....			1, 035, 605		112, 700 00	
1838.....		72, 000	1, 432, 940		117, 575 00	
1839.....		382, 480	590, 715		67, 552 50	
1840.....		473, 380	686, 910		47, 147 50	
1841.....		631, 310	79, 165			

* Calendar years to and including

STATES BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION.

its organization, 1793, to June 30, 1885.]

SILVER COINAGE.

Trade dollars.	Dollars.	Half dollars.	Quarter dollars.	Twenty cents.	Dimes.	Half dimes.	Three cents.
.....	\$204, 791	\$161, 572 00	.....	.....	.....	\$4, 320 80	.....
.....	72, 920	1, 959 00	\$1, 473 50	.....	\$2, 213 50	511 50	.....
.....	7, 776	.....	63 00	.....	2, 526 10	2, 226 35	.....
.....	327, 536	.....	.....	.....	2, 755 00	.....	.....
.....	423, 515	.....	.....	.....	.....	.....	.....
.....	220, 920	.....	.....	.....	2, 176 00	1, 200 00	.....
.....	54, 454	15, 144 50	.....	.....	3, 464 00	1, 695 50	.....
.....	41, 650	14, 945 00	.....	.....	1, 097 50	650 50	.....
.....	66, 064	15, 857 50	.....	.....	3, 304 00	1, 892 50	.....
.....	19, 570	78, 259 50	1, 684 50	.....	826 50	.....	.....
.....	321	105, 861 00	30, 348 50	.....	12, 078 00	780 00	.....
.....	.....	419, 788 00	51, 531 00	.....	.....	.....	.....
.....	.....	525, 788 00	55, 160 75	.....	16, 500 00	.....	.....
.....	.....	684, 300 00	.....	.....	.....	.....	.....
.....	.....	702, 905 00	.....	.....	4, 471 00	.....	.....
.....	.....	638, 138 00	.....	.....	635 50	.....	.....
.....	.....	601, 822 00	.....	.....	6, 518 00	.....	.....
.....	.....	814, 029 50	.....	.....	.....	.....	.....
.....	.....	620, 951 50	.....	.....	.....	.....	.....
.....	.....	519, 537 50	.....	.....	42, 150 00	.....	.....
.....	.....	.....	17, 308 00	.....	.....	.....	.....
.....	.....	23, 575 00	5, 000 75	.....	.....	.....	.....
.....	.....	607, 783 50	.....	.....	.....	.....	.....
.....	.....	980, 161 00	90, 293 50	.....	.....	.....	.....
.....	.....	1, 104, 000 00	36, 000 00	.....	.....	.....	.....
.....	.....	375, 561 00	31, 861 00	.....	94, 258 70	.....	.....
.....	.....	652, 898 50	54, 212 75	.....	118, 651 20	.....	.....
.....	.....	779, 786 50	16, 020 00	.....	10, 000 00	.....	.....
.....	.....	847, 100 00	4, 450 00	.....	44, 000 00	.....	.....
.....	.....	1, 752, 477 00	.....	.....	.....	.....	.....
.....	.....	1, 471, 583 00	42, 000 00	.....	51, 000 00	.....	.....
.....	.....	2, 002, 090 00	.....	.....	.....	.....	.....
.....	.....	2, 746, 700 00	1, 000 00	.....	121, 500 00	.....	.....
.....	.....	1, 537, 600 00	25, 500 00	.....	12, 500 00	.....	.....
.....	.....	1, 856, 078 00	.....	.....	77, 000 00	61, 500 00	.....
.....	.....	2, 382, 400 00	.....	.....	51, 000 00	62, 000 00	.....
.....	.....	2, 936, 830 00	99, 500 00	.....	77, 135 00	62, 135 00	.....
.....	.....	2, 398, 500 00	80, 000 00	.....	52, 250 00	48, 250 00	.....
.....	.....	2, 603, 000 00	39, 000 00	.....	48, 500 00	63, 500 00	.....
.....	.....	3, 206, 002 00	71, 500 00	.....	63, 500 00	74, 000 00	.....
.....	.....	2, 676, 003 00	488, 000 00	.....	141, 000 00	138, 000 00	.....
.....	1, 000 00	3, 273, 100 00	118, 000 00	.....	119, 000 00	95, 000 00	.....
.....	.....	1, 814, 910 00	63, 100 00	.....	104, 200 00	113, 800 00	.....
.....	.....	1, 773, 000 00	208, 000 00	.....	199, 250 00	112, 750 00	.....
.....	300 00	1, 667, 280 50	122, 786 50	.....	105, 311 50	53, 457 50	.....
.....	61, 005 00	717, 504 00	47, 032 00	.....	135, 858 00	67, 204 25	.....
.....	173, 000 00	155, 000 00	30, 000 00	.....	162, 250 00	57, 500 00	.....

1856. Fiscal years since.

XXI.—STATEMENT OF COINAGE OF THE MINTS OF THE UNITED STATES

[Coinage of the mint at Philadelphia from

Period.	GOLD COINAGE.					
	Double eagles.	Eagles.	Half eagles.	Three dollars.	Quarter eagles.	Dollars.
1842.....	.....	\$815, 070	\$137, 890	.....	\$7, 057 50	.....
1843.....	.....	754, 620	3, 056, 025	.....	251, 365 00	.....
1844.....	.....	63, 610	1, 701, 850	.....	16, 960 00	.....
1845.....	.....	261, 530	2, 085, 495	.....	227, 627 50	.....
1846.....	.....	200, 950	1, 979, 710	.....	53, 995 00	.....
1847.....	.....	8, 622, 640	4, 598, 903	.....	74, 535, 00	.....
1848.....	.....	1, 454, 840	1, 303, 875	.....	22, 215 00	.....
1849.....	.....	6, 536, 180	665, 350	.....	58, 235 00	\$688, 567
1850.....	\$23, 405, 220	2, 914, 510	322, 455	.....	632, 307 50	481, 953
1851.....	41, 743, 100	1, 763, 280	1, 887, 525	.....	3, 431, 870 00	3, 317, 671
1852.....	41, 060, 520	2, 631, 060	2, 869, 505	.....	2, 899, 202 50	2, 045, 351
1853.....	25, 226, 520	2, 012, 530	1, 528, 850	.....	3, 511, 670 00	4, 076, 051
1854.....	15, 157, 980	542, 509	803, 375	\$415, 854	1, 490, 645 00	1, 639, 445
1855.....	7, 293, 320	1, 217, 010	585, 490	151, 665	588, 700 00	758, 269
1856.....	6, 597, 560	604, 900	989, 950	78, 030	960, 600 00	1, 762, 936
1857.....	1, 966, 300	29, 160	345, 575	23, 496	266, 805 00	578, 356
1858.....	9, 370, 080	136, 900	163, 165	39, 177	282, 742 50	208, 724
1859.....	1, 963, 920	86, 000	103, 590	34, 572	191, 465 00	231, 873
1860.....	3, 772, 300	160, 130	98, 620	40, 206	34, 302 50	78, 743
1861.....	46, 838, 420	440, 050	282, 630	18, 216	303, 440 00	13, 955
1862.....	21, 047, 500	792, 990	3, 197, 160	17, 355	3, 133, 122 50	1, 799, 259
1863.....	3, 059, 260	36, 580	34, 510	117	52, 475 00	1, 950
1864.....	2, 519, 240	35, 800	1, 500	16, 470	1, 185 00	6, 750
1865.....	6, 376, 400	6, 750	26, 075	10, 065	9, 862 50	7, 225
1866.....	9, 964, 900	71, 100	33, 650	12, 090	7, 775 00	7, 130
1867.....	9, 905, 400	31, 150	34, 475	7, 875	8, 062 50	5, 225
1868.....	3, 770, 800	30, 500	28, 750	14, 700	9, 125 00	10, 550
1869.....	3, 050, 500	94, 850	8, 925	7, 575	10, 862 50	5, 925
1870.....	2, 756, 900	25, 350	20, 175	10, 605	11, 387 50	6, 335
1871.....	3, 154, 800	16, 400	14, 200	4, 020	13, 400 00	3, 940
1872.....	2, 010, 000	18, 000	10, 450	6, 090	7, 575 00	1, 030
1873.....	17, 644, 500	8, 250	5, 525	75	4, 062 50	2, 525
1874.....	24, 845, 200	151, 200	572, 900	125, 460	448, 650 00	323, 920
1875.....	4, 778, 200	380, 600	1, 740	60	2, 250 00	20
1876.....	8, 228, 900	8, 320	8, 385	135	11, 552 50	3, 645
1877.....	9, 794, 000	1, 200	900	4, 464	780 00	2, 220
1878.....	9, 895, 300	7, 170	525, 360	137, 850	325, 400 00	1, 720
1879.....	9, 300, 600	738, 000	565, 500	109, 182	613, 050 00	3, 020
1880.....	2, 217, 400	14, 097, 100	11, 309, 750	9, 090	3, 075 00	3, 030
1881.....	45, 520	26, 841, 760	22, 904, 880	4, 698	9, 140 00	3, 276
1882.....	500	36, 700, 050	22, 971, 725	75	62 50	6, 025
1883.....	12, 900	6, 121, 150	1, 572, 275	4, 665	10, 137 50	8, 855
1884.....	1, 080	1, 392, 980	1, 365, 230	2, 955	4, 930 00	9, 979
1885.....	16, 140	1, 425, 200	1, 491, 390	5, 670	6, 982 50	7, 181
Total	378, 791, 180	123, 165, 010	114 674, 160	1, 312, 557	22, 498, 110 00	18, 112, 629

BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION—Continued.

its organization, 1793, to June 30, 1885.]

SILVER COINAGE.

Trade dollars.	Dollars.	Half dollars.	Quarter dollars.	Twenty cents.	Dimes.	Half dimes.	Three cents.
.....	\$184, 618 00	\$1, 006, 382 00	\$22, 000 00	.....	\$188, 750 00	\$40, 750 00	.....
.....	165, 100 00	1, 922, 000 00	161, 400 00	.....	137, 000 00	58, 250 00	.....
.....	20, 000 00	883, 000 00	105, 300 00	.....	7, 250 00	21, 500 00	.....
.....	24, 500 00	294, 500 00	230, 500 00	.....	175, 500 00	78, 200 00	.....
.....	110, 600 00	1, 105, 000 00	127, 500 00	.....	3, 130 00	1, 350 00	.....
.....	140, 750 00	578, 000 00	183, 500 00	.....	24, 500 00	63, 700 00	.....
.....	15, 000 00	290, 000 00	36, 500 00	.....	45, 150 00	33, 400 00	.....
.....	62, 600 00	626, 000 00	85, 000 00	.....	83, 900 00	65, 450 00	.....
.....	7, 500 00	113, 500 00	47, 700 00	.....	193, 150 00	47, 750 00	.....
.....	1, 300 00	100, 375 00	40, 000 00	.....	102, 650 00	39, 050 00	\$163, 422 00
.....	1, 100 00	38, 565 00	44, 265 00	.....	153, 550 00	50, 025 00	559, 905 00
.....	46, 110 00	1, 766, 354 00	3, 813, 555 00	.....	1, 217, 301 00	667, 251 00	342, 000 00
.....	33, 140 00	1, 491, 000 00	3, 095, 000 00	.....	447, 000 00	287, 000 00	20, 130 00
.....	26, 000 00	379, 750 00	714, 250 00	.....	207, 500 00	87, 500 00	4, 170 00
.....	63, 500 00	469, 000 00	1, 816, 000 00	.....	578, 000 00	244, 000 00	43, 740 00
.....	94, 000 00	71, 000 00	576, 000 00	.....	489, 000 00	197, 000 00	22, 080 00
.....	.....	2, 014, 000 00	2, 650, 000 00	.....	69, 000 00	200, 000 00	37, 980 00
.....	73, 500 00	1, 318, 000 00	1, 249, 000 00	.....	176, 000 00	142, 000 00	41, 400 00
.....	315, 530 00	174, 900 00	227, 450 00	.....	57, 600 00	43, 500 00	16, 440 00
.....	164, 900 00	370, 650 00	758, 550 00	.....	157, 300 00	139, 350 00	7, 950 00
.....	1, 750 00	1, 195, 675 00	700, 937 50	.....	136, 455 00	117, 627 50	18, 256 50
.....	31, 400 00	212, 630 00	103, 215 00	.....	4, 946 00	3, 223 00	2, 803 80
.....	23, 170 00	159, 985 00	17, 492 50	.....	37 00	18 50	11 10
.....	32, 900 00	246, 600 00	22, 150 00	.....	2, 160 00	3, 080 00	618 00
.....	58, 550 00	334, 525 00	4, 962 50	.....	65 00	532 50	679 50
.....	57, 000 00	289, 450 00	5, 175 00	.....	670 00	435 00	141 00
.....	54, 800 00	205, 750 00	7, 475 00	.....	42, 315 00	4, 290 00	120 00
.....	231, 350 00	193, 675 00	4, 137 50	.....	4, 905 00	527 50	151 50
.....	576, 150 00	445, 975 00	21, 812 50	.....	72, 185 00	36, 722 50	115 50
.....	657, 625 00	470, 562 50	20, 524 25	.....	1, 067 50	6, 346 25	129 75
.....	1, 109, 435 00	519, 817 50	37, 058 75	.....	183, 953 50	129, 001 75	61 05
.....	964, 150 00	969, 025 00	154, 212 50	.....	398, 685 00	141, 142 50	25 50
\$1, 058, 200	.....	1, 142, 150 00	327, 275 00	.....	435, 510 00	.....	.....
476, 800	.....	2, 207, 500 00	500, 950 00	\$2, 200	458, 060 00	.....	.....
280, 050	.....	2, 456, 525 00	2, 415, 262 50	7, 560	1, 441, 105 00	.....	.....
899, 900	.....	5, 649, 350 00	4, 167, 175 00	1, 410	727, 070 00	.....	.....
2, 386, 010	4, 907, 500 00	2, 299, 255 00	1, 763, 027 50	142	453, 891 00	.....	.....
*642	12, 124, 500 00	225 00	112 50	.....	45 00	.....	.....
*2, 473	15, 185, 750 00	3, 275 00	3, 837 50	.....	1, 575 00	.....	.....
*1, 083	9, 113, 955 00	4, 677 50	3, 638 75	.....	3, 695 50	.....	.....
*1, 102	11, 051, 075 00	5, 537 50	3, 268 75	.....	2, 507 50	.....	.....
*1, 000	11, 601, 119 00	2, 759 50	4, 079 75	.....	717, 511 90	.....	.....
*264	13, 230, 930 00	4, 465 00	3, 832 50	.....	615, 160 30	.....	.....
.....	14, 717, 552 00	2, 557 50	2, 178 75	.....	306, 871 70	.....	.....
5, 107, 524	98, 955, 231 00	82, 295, 704 00	28, 108, 087 25	11, 342	12, 412, 557 40	3, 977, 346 65	1, 260, 250 20

* Issued as "proof pieces."

XXI.—STATEMENT OF COINAGE OF THE MINTS OF THE UNITED STATES

[Coinage of the mint at Philadelphia from

Periods.	MINOR COINAGE.		
	Five cents.	Three cents.	Two cents.
1793 to 1795			
1796.....			
1797			
1798.....			
1799.....			
1800.....			
1801.....			
1802			
1803.....			
1804.....			
1805.....			
1806.....			
1807.....			
1808.....			
1809.....			
1810.....			
1811.....			
1812.....			
1813.....			
1814.....			
1815.....			
1816.....			
1817.....			
1818.....			
1819.....			
1820.....			
1821.....			
1822.....			
1823.....			
1824.....			
1825.....			
1826			
1827.....			
1828.....			
1829.....			
1830.....			
1831.....			
1832			
1833.....			
1834.....			
1835.....			
1836			
1837.....			
1838			
1839			
1840			
1841			
1842.....			

BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION—Continued.

its organization, 1793 to June 30, 1885.]

MINOR COINAGE.		TOTAL COINAGE.			
Cents.	Half cents.	Gold.	Silver.	Minor.	Total.
\$10,660 33	\$712 67	\$71,485 00	\$370,683 80	\$11,373 00	\$453,541 80
9,747 00	577 40	102,727 50	79,077 50	10,324 40	192,129 40
8,975 10	535 24	103,422 50	12,591 45	9,510 34	125,514 29
9,797 00	.....	205,610 00	330,291 00	9,797 00	545,698 00
9,045 85	60 83	213,285 00	423,515 00	9,106 68	645,906 68
28,221 75	1,057 65	317,760 00	224,296 00	29,279 40	571,335 40
13,628 37	.....	422,570 00	74,758 00	13,628 37	510,956 37
34,351 00	71 83	423,310 00	58,343 00	34,422 83	516,075 83
24,713 53	489 50	258,377 50	87,118 00	25,203 03	370,698 53
7,568 38	5,276 56	258,642 50	100,340 50	12,844 94	371,827 94
9,411 16	4,072 32	170,367 50	149,388 50	13,483 48	333,239 48
3,480 00	1,780 00	324,505 00	471,319 00	5,260 00	801,084 00
7,272 21	2,380 00	437,495 00	597,448 75	9,652 21	1,044,595 96
11,090 00	2,000 00	234,665 00	684,300 00	13,090 00	982,055 00
2,228 67	5,772 86	169,375 00	707,376 00	8,001 53	884,752 53
14,585 00	1,075 00	501,435 00	638,773 50	15,660 00	1,155,868 50
2,180 25	315 70	497,905 00	608,340 00	2,495 95	1,108,740 95
10,755 00	.....	290,435 00	814,029 50	10,755 00	1,115,219 50
4,180 00	.....	477,140 00	620,951 50	4,180 00	1,102,271 50
3,578 30	.....	77,270 00	561,687 50	3,578 30	642,535 80
.....	.....	3,175 00	17,308 00	.....	20,483 00
28,209 82	.....	.....	28,575 75	28,209 82	56,785 57
39,484 00	.....	.....	607,783 50	39,484 00	647,267 50
31,670 00	.....	242,940 00	1,070,454 50	31,670 00	1,345,064 50
26,710 00	.....	258,615 00	1,140,000 00	26,710 00	1,425,325 00
44,075 50	.....	1,319,030 00	501,680 70	44,075 50	1,864,786 20
3,890 00	.....	189,325 00	825,762 45	3,890 00	1,018,977 45
20,723 39	.....	88,980 00	805,806 50	20,723 39	915,509 89
.....	.....	72,425 00	895,550 00	.....	967,975 00
12,620 00	.....	93,200 00	1,752,477 00	12,620 00	1,858,297 00
14,611 00	315 00	156,385 00	1,564,583 00	14,926 00	1,735,894 00
15,174 25	1,170 00	92,245 00	2,002,090 00	16,344 25	2,110,679 25
23,577 32	.....	131,565 00	2,869,200 00	23,577 32	3,024,342 32
22,606 24	3,030 00	140,145 00	1,575,600 00	25,636 24	1,741,381 24
14,145 00	2,435 00	295,717 50	1,994,578 00	16,580 00	2,306,875 50
17,115 00	.....	643,105 00	2,495,400 00	17,115 00	3,155,620 00
33,592 60	11 00	714,270 00	3,175,600 00	33,603 60	3,923,473 60
23,620 00	.....	798,435 00	2,579,000 00	23,620 00	3,401,055 00
27,390 00	770 00	978,550 00	2,759,000 00	28,160 00	3,765,710 00
18,551 00	600 00	3,954,270 00	3,415,002 00	19,151 00	7,388,423 00
38,784 00	705 00	2,186,175 00	3,443,003 00	39,489 00	5,668,667 00
21,110 00	1,990 00	4,135,700 00	3,606,100 00	23,100 00	7,764,900 00
55,583 00	.....	1,148,305 00	2,096,010 00	55,583 00	3,299,898 00
63,702 00	.....	1,622,515 00	2,293,000 00	63,702 00	3,979,217 00
31,286 61	.....	1,040,747 50	1,949,136 00	31,286 61	3,021,170 11
24,627 00	.....	1,207,437 50	1,028,603 25	24,627 00	2,260,667 75
15,973 67	.....	710,475 00	577,750 00	15,973 67	1,304,198 67
23,833 90	.....	960,017 50	1,442,500 00	23,833 90	2,426,351 40

XXI.—STATEMENT OF THE COINAGE OF THE MINTS OF THE UNITED STATES

[Coinage of the mint at Philadelphia from

Periods.	MINOR COINAGE.		
	Five cents.	Three cents.	Two cents.
1843.....			
1844.....			
1845.....			
1846.....			
1847.....			
1848.....			
1849.....			
1850.....			
1851.....			
1852.....			
1853.....			
1854.....			
1855.....			
1856.....			
1857.....			
1858.....			
1859.....			
1860.....			
1861.....			
1862.....			
1863.....			
1864.....			\$36,450 00
1865.....		\$105,930 00	535,600 00
1866.....	\$66,240 00	270,270 00	122,980 00
1867.....	1,562,500 00	133,410 00	69,880 00
1868.....	1,445,100 00	108,390 00	61,330 00
1869.....	1,101,250 00	64,380 00	34,615 00
1870.....	487,500 00	42,690 00	22,890 00
1871.....	171,950 00	27,630 00	22,105 00
1872.....	89,200 00	18,330 00	6,170 00
1873.....	352,400 00	34,320 00	
1874.....	244,350 00	29,640 00	
1875.....	94,650 00	12,540 00	
1876.....	132,700 00	7,560 00	
1877.....	25,250 00		
1878.....	80 00	48 00	
1879.....	1,175 00	984 00	
1880.....	1,247 50	982 50	
1881.....	177 75	32,416 65	
1882.....	220,038 75	104 25	
1883.....	1,022,774 40	858 57	
1884.....	768,745 25	244 86	
1885.....	351,691 00	144 60	
Total.....	8,139,019 65	890,873 43	912,020 00

BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION—Continued.

its organization, 1798, to June 30, 1885.]

MINOR COINAGE.		TOTAL COINAGE.			
Cents.	Half cents.	Gold.	Silver.	Minor.	Total.
\$24,283 20	.....	\$4,062,010 00	\$2,443,750 00	\$24,283 20	\$6,530,043 20
23,987 52	.....	1,782,420 00	1,037,050 00	23,987 52	2,843,457 52
38,948 04	.....	2,574,652 50	803,200 00	38,948 04	3,416,800 54
41,208 00	.....	2,234,655 00	1,347,580 00	41,208 00	3,623,443 00
61,836 69	.....	13,296,080 00	990,450 00	61,836 69	14,348,366 69
64,157 99	.....	2,780,930 00	420,050 00	64,157 99	3,265,137 99
41,785 00	\$199 32	7,948,332 00	922,950 00	41,984 32	8,913,266 32
44,268 44	199 06	27,756,445 50	409,600 00	44,467 50	28,210,513 00
98,897 07	738 36	52,143,446 00	446,797 00	99,635 43	52,689,878 43
50,630 94	.....	51,505,638 50	847,410 00	50,630 94	52,403,679 44
66,411 31	648 47	36,355,621 00	7,852,571 00	67,059 78	44,275,251 78
42,361 56	276 79	20,049,799 00	5,373,270 00	42,638 35	25,465,707 35
15,748 29	282 50	10,594,454 00	1,419,170 00	16,030 79	12,029,654 79
26,904 63	202 15	10,993,976 00	3,214,240 00	27,106 78	14,235,322 78
63,334 56	175 90	3,209,692 00	1,427,000 00	63,510 46	4,700,202 46
234,000 00	.....	10,200,788 50	4,970,980 00	234,000 00	15,405,768 50
307,000 00	.....	2,611,360 00	2,999,900 00	307,000 00	5,918,260 00
342,000 00	.....	4,184,301 50	835,420 00	342,000 00	5,361,721 50
101,660 00	.....	47,896,711 00	1,598,700 00	101,660 00	49,597,071 00
116,000 00	.....	29,987,386 50	2,170,701 50	116,000 00	32,274,088 00
478,450 00	.....	3,184,892 00	353,217 80	478,450 00	4,021,559 80
427,350 00	.....	2,580,945 00	200,714 10	463,800 00	3,245,459 10
541,800 00	.....	6,436,377 50	307,508 00	1,183,330 00	7,927,215 50
187,080 00	.....	10,096,645 00	399,314 50	646,570 00	11,142,529 50
113,750 00	.....	9,992,187 50	352,871 00	1,879,540 00	12,224,598 50
98,565 00	.....	3,864,425 00	314,750 00	1,713,385 00	5,892,560 00
78,810 00	.....	3,178,637 50	434,746 50	1,279,055 00	4,892,439 00
58,365 00	.....	2,830,752 50	1,152,960 50	611,445 00	4,595,158 00
62,075 00	.....	3,206,760 00	1,156,255 25	283,760 00	4,646,775 25
9,320 00	.....	2,053,145 00	1,979,327 55	123,020 00	4,155,492 55
107,330 00	.....	17,664,937 50	2,627,240 50	494,050 00	20,786,228 00
137,935 00	.....	26,467,330 00	2,963,135 00	411,925 00	29,842,390 00
123,185 00	.....	5,162,870 00	3,645,510 00	230,375 00	9,038,755 00
120,090 00	.....	8,260,937 50	6,600,502 50	260,350 00	15,121,790 00
36,915 00	.....	9,803,564 00	11,444,935 00	62,165 00	21,310,664 00
30,566 00	.....	10,892,800 00	11,809,825 50	30,694 00	22,733,319 50
95,639 00	.....	11,329,352 00	12,125,524 50	97,798 00	23,552,674 50
267,741 50	.....	27,639,445 00	15,196,910 50	269,971 50	43,106,327 00
372,515 55	.....	49,809,274 00	9,127,049 75	405,109 95	59,341,433 70
424,614 75	.....	59,678,427 50	11,063,490 75	644,757 75	71,386,686 00
404,674 19	.....	7,729,982 50	12,326,470 15	1,428,307 16	21,484,759 81
405,719 62	.....	2,777,154 00	13,854,651 80	1,174,709 73	17,806,515 53
175,721 20	.....	2,952,563 50	15,029,159 95	527,556 80	18,509,280 25
7,481,769 25	39,926 11	658,553,646 00	232,128,042 75	17,463,608 44	908,145,297 19

XXI.—STATEMENT OF COINAGE OF THE MINTS OF THE UNITED STATES
[Coinage of the mint at New Orleans from its

Year.	GOLD.					
	Double eagles.	Eagles.	Half eagles.	Three dollars.	Quarter eagles.	Dollars.
1838						
1839					\$23, 490	
1840			\$152, 000		65, 500	
1841		\$25, 000	41, 750		18, 450	
1842		274, 000	82, 000		49, 500	
1843		1, 751, 620	505, 375		920, 005	
1844		1, 187, 000	1, 823, 000			
1845		475, 000	205, 000			
1846		817, 800	290, 000		165, 000	
1847		5, 715, 000	60, 000		310, 000	
1848		358, 500				
1849		239, 000				\$215, 000
1850	\$2, 820, 000	575, 000			210, 000	14, 000
1851	6, 300, 000	2, 630, 000	205, 000		370, 000	290, 000
1852	3, 800, 000	180, 000			350, 000	140, 000
1853	1, 420, 000	510, 000				290, 000
1854	65, 000	525, 000	230, 000	\$72, 000	382, 500	
1855	160, 000	180, 000	55, 500			55, 000
1856	45, 000	145, 000	50, 000		52, 750	
1857						
1858	950, 000	215, 000	65, 000		85, 000	
1859	490, 000	40, 000				
1860	87, 000	82, 000				
To January 31, 1861	192, 000	52, 000				
Total	16, 329, 000	15, 976, 920	3, 764, 625	72, 000	3, 002, 195	1, 004, 000
1879						
1880	46, 500	82, 000				
1881		80, 000				
1882		101, 700				
1883		43, 000				
1884						
1885						
Total	16, 375, 500	16, 283, 620	3, 764, 625	72, 000	3, 002, 195	1, 004, 000

BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION—Continued.
organization, 1838, to its suspension, 1861.]

SILVER.						Total gold.	Total silver.	Total value.
Dollars.	Half dollars.	Quarter dollars.	Dimes.	Half dimes.	Three cents.			
			\$40, 243				\$40, 243	\$40, 243
	\$50, 000		124, 160	\$53, 000		\$23, 490	227, 160	250, 650
	427, 550	\$106, 300	117, 500	46, 750		217, 500	698, 100	915, 600
	200, 500	113, 000	200, 750	40, 750		85, 200	555, 000	640, 200
	478, 500	192, 250	202, 000	17, 500		405, 500	890, 250	1, 295, 750
	1, 134, 000	242, 000	15, 000			3, 177, 000	1, 391, 000	4, 568, 000
	1, 002, 500	185, 000		11, 000		3, 010, 000	1, 198, 500	4, 208, 500
	1, 047, 000		23, 000			680, 000	1, 070, 000	1, 750, 000
\$59, 000	1, 152, 000					1, 272, 800	1, 211, 000	2, 483, 800
	1, 292, 000	92, 000				6, 085, 000	1, 384, 000	7, 469, 000
	1, 590, 000			30, 000		358, 500	1, 620, 000	1, 978, 500
	1, 155, 000		30, 000	7, 000		454, 000	1, 192, 000	1, 646, 000
40, 000	1, 228, 000	103, 000	51, 000	34, 500		3, 619, 000	1, 456, 500	5, 075, 500
	201, 000	22, 000	40, 000	43, 000	\$21, 600	9, 795, 000	327, 600	10, 122, 600
	72, 000	24, 000	43, 000	13, 000		4, 470, 000	152, 000	4, 622, 000
	664, 000	333, 000	110, 000	118, 000		2, 220, 000	1, 225, 000	3, 445, 000
	2, 620, 000	371, 000	177, 000	78, 000		1, 274, 500	3, 246, 000	4, 520, 500
	1, 844, 000	44, 000		30, 000		450, 500	1, 918, 000	2, 368, 500
	1, 329, 000	242, 000	118, 000	55, 000		292, 750	1, 744, 000	2, 036, 750
	2, 307, 000	354, 000	154, 000	127, 000		1, 315, 000	2, 942, 000	4, 257, 000
200, 000	2, 456, 000	136, 000	44, 000	53, 000		530, 000	2, 889, 000	3, 419, 000
280, 000	1, 106, 000	97, 000	37, 000	53, 000		169, 000	1, 573, 000	1, 742, 000
395, 000	414, 000					244, 000	809, 000	1, 053, 000
974, 000	23, 770, 050	2, 656, 550	1, 526, 653	810, 500	21, 600	40, 148, 740	29, 759, 353	69, 908, 093
737, 000							737, 000	737, 000
4, 430, 000						128, 500	4, 430, 000	4, 558, 500
6, 525, 000						80, 000	6, 525, 000	6, 605, 000
4, 958, 000						101, 700	4, 958, 000	5, 059, 700
8, 040, 000						43, 000	8, 040, 000	8, 083, 000
8, 905, 000							8, 905, 000	8, 905, 000
10, 135, 000							10, 135, 000	10, 135, 000
44, 704, 000	23, 770, 050	2, 656, 550	1, 526, 653	810, 500	21, 600	40, 501, 940	73, 489, 353	113, 991, 293

XXI.—STATEMENT OF COINAGE OF THE MINTS OF UNITED STATES, &C.—Continued.

[Statement of coinage at the mint at Dahlonega, Ga., from its organization, 1838, to its suspension, 1861.]

Year.	GOLD.				Total value.
	Half eagles.	Three dollars.	Quarter eagles.	Dollars.	
1838	\$102,915	.....	.....	.....	\$102,915 00
1839	94,695	.....	\$34,185 00	.....	128,880 00
1840	114,480	.....	8,830 00	.....	123,310 00
1841	152,475	.....	10,410 00	.....	162,885 00
1842	298,040	.....	11,607 50	.....	309,647 50
1843	492,260	.....	90,522 50	.....	582,782 50
1844	444,910	.....	43,330 00	.....	488,240 00
1845	453,145	.....	48,650 00	.....	501,795 00
1846	401,470	.....	48,257 50	.....	449,727 50
1847	322,025	.....	39,460 00	.....	361,485 00
1848	237,325	.....	34,427 50	.....	271,752 50
1849	195,180	.....	27,362 50	\$21,588	244,130 50
1850	219,750	.....	30,370 00	8,382	258,502 00
1851	313,550	.....	28,160 00	9,882	351,592 00
1852	457,260	.....	10,195 00	6,360	473,815 00
1853	448,390	.....	7,945 00	6,583	462,918 00
1854	282,065	\$3,360	4,400 00	2,935	292,760 00
1855	112,160	.....	2,807 50	1,811	116,778 50
1856	98,930	.....	2,185 00	1,460	102,575 00
1857	27,350	.....	3,660 00	1,896	32,906 00
1858	96,280	.....	2,250 00	1,637	100,167 00
1859	57,020	.....	1,605 00	6,957	65,582 00
1860	64,000	.....	4,005 00	1,472	69,477 00
To February 28, 1861....	59,380	.....	.....	1,566	60,946 00
Total	5,545,055	3,360	494,625 00	72,529	6,115,569 00

XXI.—STATEMENT OF COINAGE OF THE MINTS OF UNITED STATES, &C.—Continued.

[Statement of coinage at the mint at Charlotte, N. C., from its organization, 1838, to its suspension, 1861.]

Year.	GOLD.			Total value.
	Half eagles.	Quarter eagles.	Dollars.	
1838.....	\$64, 430	\$19, 735 00		\$84, 165 00
1839.....	117, 335	45, 432 50		162, 767 50
1840.....	94, 970	32, 085 00		127, 055 00
1841.....	107, 335	25, 702 50		133, 037 50
1842.....	137, 400	21, 605 00		159, 005 00
1843.....	221, 765	65, 240 00		287, 005 00
1844.....	118, 155	29, 055 00		147, 210 00
1845.....				
1846.....	64, 975	12, 020 00		76, 995 00
1847.....	420, 755	58, 065 00		478, 820 00
1848.....	322, 360	41, 970 00		364, 330 00
1849.....	324, 115	25, 550 00	\$11, 634	361, 299 00
1850.....	317, 955	22, 870 00	6, 966	347, 791 00
1851.....	245, 880	37, 307 50	41, 267	324, 454 50
1852.....	362, 870	24, 430 00	9, 434	396, 734 00
1853.....	327, 855		11, 515	339, 370 00
1854.....	196, 415	18, 237 50		214, 652 50
1855.....	198, 940	9, 192 50	9, 803	217, 935 50
1856.....	142, 285	19, 782 50		162, 067 50
1857.....	65, 685		13, 280	78, 965 00
1858.....	155, 330	22, 640 00		177, 970 00
1859.....	197, 500		5, 235	202, 735 00
1860.....	115, 025	18, 672 50		133, 697 50
To March 31, 1861.....	70, 580			70, 580 00
Total	4, 389, 915	549, 592 50	109, 134	5, 048, 641 50

XXI.—STATEMENT OF COINAGE OF THE MINTS OF THE UNITED STATES

[Statement of coinage of the mint at San Francisco

Year.	GOLD.						SILVER.	
	Double eagles.	Eagles.	Half eagles.	Three dollars.	Quarter eagles.	Dollars.	Dollars.	Trade dollars.
1854	\$2, 829, 360	\$1, 238, 260	\$1, 340	.....	\$615	\$14, 632	.....	.....
1855	17, 183, 500	90, 000	305, 000	\$19, 800	.....	.....	.....	.....
1856	23, 635, 000	735, 000	470, 500	103, 500	177, 800	24, 600	.....	.....
1857*	12, 090, 000	100, 000	235, 000	15, 000	50, 000	.....	.....	.....
1858	17, 718, 800	278, 000	293, 000	27, 000	123, 000	20, 000	.....	.....
1859	13, 782, 800	20, 000	48, 600	.....	20, 000	15, 000	\$15, 000	.....
1860	11, 599, 500	100, 000	83, 500	21, 000	72, 000	13, 000	5, 000	.....
1861	12, 286, 000	60, 000	40, 000	.....	35, 000	.....	.....	.....
1862	15, 200, 000	180, 000	90, 000	.....	75, 000	.....	.....	.....
1863	17, 328, 460	90, 000	82, 500	.....	10, 000	.....	.....	.....
1864	18, 946, 400	50, 000	50, 000	.....	22, 000	.....	.....	.....
1865	18, 503, 200	87, 000	60, 000	.....	20, 640	.....	.....	.....
1866	17, 530, 000	305, 000	267, 100	.....	115, 200	.....	.....	.....
1867	18, 020, 000	20, 000	120, 000	.....	65, 000	.....	.....	.....
1868	13, 935, 000	125, 000	125, 000	.....	65, 000	.....	.....	.....
1869	18, 220, 000	115, 000	220, 000	.....	95, 000	.....	.....	.....
1870	19, 195, 000	29, 300	65, 000	.....	23, 750	3, 000	.....	.....
1871	17, 660, 000	80, 000	85, 000	.....	40, 000	.....	.....	.....
1872	17, 400, 000	198, 000	127, 000	.....	65, 000	.....	.....	.....
1873	16, 612, 000	140, 000	180, 000	.....	35, 000	.....	9, 700	.....
1874	21, 960, 000	120, 000	155, 000	.....	67, 500	.....	.....	\$2, 121, 000
1875	26, 000, 000	100, 000	100, 000	.....	.....	.....	.....	3, 379, 000
1876	26, 900, 000	50, 000	45, 000	.....	41, 500	.....	.....	4, 523, 000
1877	32, 460, 000	55, 000	32, 500	.....	5, 000	.....	.....	8, 042, 000
1878	40, 740, 000	115, 000	101, 000	.....	83, 500	.....	2, 552, 000	8, 582, 000
1879	27, 680, 000	261, 000	834, 500	.....	553, 750	.....	12, 722, 000	.....
1880	19, 216, 000	4, 612, 500	4, 314, 500	.....	.....	.....	7, 910, 000	.....
1881	15, 300, 000	6, 310, 000	6, 890, 000	.....	.....	.....	11, 460, 000	.....
1882	14, 200, 000	7, 400, 000	7, 250, 000	.....	.....	.....	11, 000, 000	.....
1883	26, 380, 000	380, 000	.....	.....	.....	.....	7, 350, 000	.....
1884	22, 460, 000	452, 500	631, 000	.....	.....	.....	4, 800, 000	.....
1885	19, 040, 000	790, 000	1, 027, 500	.....	.....	.....	2, 900, 000	.....
Total	612, 011, 020	24, 686, 560	24, 329, 540	186, 300	1, 861, 255	90, 232	60, 723, 700	26, 647, 000

* First six months.

BY DENOMINATION OF PIECES FROM THEIR ORGANIZATION—Continued.

from its organization, 1854, to June 30, 1885.]

SILVER.					Total gold.	Total silver.	Total value.
Half dollars.	Quarter dollars.	Twenty cents.	Dimes.	Half dimes.			
					\$4, 084, 207 00		\$4, 084, 207 00
\$60, 975 00	\$103, 100 00				17, 598, 300 00	\$164, 075 00	17, 762, 375 00
105, 500 00	71, 500 00				25, 146, 400 00	177, 000 00	25, 323, 400 00
43, 000 00	7, 000 00				12, 490, 000 00	50, 000 00	12, 540, 000 00
109, 000 00	15, 750 00		\$3, 000 00		18, 459, 800 00	127, 750 00	18, 587, 550 00
231, 500 00	43, 000 00		9, 000 00		13, 886, 400 00	298, 500 00	14, 184, 900 00
346, 500 00	6, 000 00		4, 000 00		11, 889, 000 00	361, 500 00	12, 250, 500 00
175, 000 00	13, 000 00		10, 000 00		12, 421, 000 00	198, 000 00	12, 619, 000 00
589, 750 00	30, 000 00		21, 950 00		15, 545, 000 00	641, 700 00	16, 186, 700 00
771, 000 00	10, 750 00		29, 125 00	\$5, 000 00	17, 510, 960 00	815, 875 00	18, 326, 835 00
324, 000 00	5, 000 00		14, 000 00	4, 500 00	19, 068, 400 00	347, 500 00	19, 415, 900 00
306, 500 00	5, 500 00		15, 000 00	1, 800 00	18, 670, 840 00	328, 800 00	18, 999, 640 00
245, 000 00	4, 750 00		21, 000 00	10, 200 00	18, 217, 300 00	280, 950 00	18, 498, 250 00
608, 000 00	13, 000 00		13, 000 00		18, 225, 000 00	634, 000 00	18, 859, 000 00
741, 000 00	30, 000 00		31, 000 00	20, 000 00	14, 250, 000 00	822, 000 00	15, 072, 000 00
368, 000 00	19, 000 00		19, 000 00		18, 650, 000 00	406, 600 00	19, 056, 000 00
557, 000 00			26, 000 00	11, 500 00	19, 316, 050 00	594, 500 00	19, 910, 550 00
722, 000 00	7, 725 00		9, 000 00	8, 050 00	17, 865, 000 00	746, 775 00	18, 611, 775 00
883, 000 00	12, 750 00		36, 000 00	23, 750 00	17, 790, 000 00	955, 500 00	18, 745, 560 00
18, 500 00	16, 000 00		16, 000 00	34, 300 00	16, 967, 000 00	91, 500 00	17, 061, 560 00
241, 000 00	129, 000 00		59, 500 00		22, 392, 500 00	2, 550, 500 00	24, 853, 000 00
479, 000 00	123, 000 00	\$3, 000 00	343, 000 00		26, 200, 000 00	4, 327, 000 00	30, 527, 000 00
1, 772, 000 00	1, 080, 000 00	228, 000 00	1, 350, 000 00		27, 036, 500 00	8, 953, 000 00	35, 989, 500 00
2, 825, 000 00	2, 270, 000 00		412, 000 00		32, 552, 500 00	13, 549, 000 00	46, 101, 500 00
1, 526, 000 00	1, 130, 000 00		78, 000 00		41, 039, 500 00	13, 868, 000 00	54, 907, 500 00
					29, 329, 250 00	12, 722, 000 00	42, 051, 250 00
					28, 143, 000 00	7, 910, 000 00	36, 053, 000 00
					28, 500, 000 00	11, 460, 000 00	39, 960, 000 00
					28, 850, 000 00	11, 000, 000 00	39, 850, 000 00
					26, 760, 000 00	7, 350, 000 00	34, 110, 000 00
			50, 000 00		23, 543, 500 00	4, 850, 000 00	28, 393, 500 00
			8, 799 70		20, 857, 500 00	2, 908, 799 70	23, 766, 299 70
14, 048, 225 00	5, 145, 825 00	231, 000 00	2, 578, 374 70	119, 100 00	663, 164, 907 00	109, 493, 224 70	772, 658, 131 70

XXI.—STATEMENT OF COINAGE OF THE MINTS OF THE UNITED STATES

[Statement of the coinage of the mint of the United States,

Year.	GOLD.			SILVER.	
	Double eagles.	Eagles.	Half eagles.	Dollars.	Trade dollars.
1870.....	\$66,580	\$34,480	\$9,450	\$12,158	.....
1871.....	104,440	66,850	59,425	304	.....
1872.....	388,500	38,600	106,250	3,526	.....
1873.....	509,000	56,400	52,000	3,300	.....
1874.....	1,478,700	112,280	81,880	.....	\$409,700
1875.....	1,969,940	119,240	101,915	.....	1,841,700
1876.....	2,767,820	95,290	18,415	.....	1,329,000
1877.....	1,687,700	.....	34,435	.....	221,000
1878.....	771,040	33,320	62,320	1,114,000	410,000
1879.....	253,740	32,440	42,130	1,644,000	.....
1880.....	35,460	44,720	166,610	408,000	.....
1881.....	.....	157,290	187,300	539,000	.....
1882.....	363,420	167,660	252,230	763,000	.....
1883.....	1,133,220	67,640	203,085	1,120,000	.....
1884.....	1,304,820	187,560	119,790	1,164,000	.....
1885.....	992,360	31,690	27,010	776,000	.....
Total.....	13,826,740	1,245,460	1,524,245	7,547,288	4,211,400
December 31, 1885.....	.....	.....	.....	28,000	.....
Total	13,826,740	1,245,460	1,524,245	7,575,288	4,211,400

BY DENOMINATIONS OF PIECES FROM THEIR ORGANIZATION—Continued.

Carson City, to the close of the fiscal year ending June 30, 1885.]

SILVER.				Total gold.	Total silver.	Total value.
Half dollars.	Quarter dollars.	Twenty cents.	Dimes.			
\$6,400 00	\$1,235 00	.....	.....	\$110,510	\$19,793 00	\$130,303 00
50,208 50	1,722 50	.....	\$640 00	230,715	52,875 00	283,590 00
83,675 00	5,287 50	.....	2,518 00	533,350	95,006 50	628,356 50
212,250 00	4,150 00	.....	4,355 00	617,400	224,055 00	841,455 00
55,780 00	2,240 50	.....	2,245 80	1,672,860	469,966 30	2,142,826 30
167,000 00	.....	\$658 00	88,500 00	2,191,095	2,097,858 00	4,288,953 00
757,000 00	611,000 00	28,000 00	848,000 00	2,881,525	3,573 000 00	6,454,525 00
1,272,000 00	1,147,000 00	.....	916,000 00	1,722,135	3,556,000 00	5,278,135 00
50,000 00	810,000 00	.....	229,000 00	866,680	2,613,000 00	3,479,680 00
.....	.....	.....	.....	328,310	1,644,000 00	1,972,310 00
.....	.....	.....	.....	246,790	408,000 00	654,790 00
.....	.....	.....	.....	344,590	539,000 00	883,590 00
.....	.....	.....	.....	783,310	763,000 00	1,546,310 00
.....	.....	.....	.....	1,403,945	1,120,000 00	2,523,945 00
.....	.....	.....	.....	1,612,170	1,164,000 00	2,776,170 00
.....	.....	.....	.....	1,051,060	776,000 00	1,827,060 00
2,654,313 50	2,582,635 50	28,658 00	2,091,258 80	16,596,445	19,115,553 80	35,711,998 80
.....	.....	.....	.....	.....	28,000 00	28,000 00
2,654,313 50	2,582,635 50	28,658 00	2,091,258 80	16,596,445	19,143,553 80	35,739,998 80

XXII.—WELLS, FARGO & COMPANY (EXPRESS AND BANKING), PRECIOUS METALS PRODUCT, UNITED STATES OF AMERICA AND MEXICO.

(Circular.)

WELLS, FARGO & COMPANY, EXPRESS AND BANKING,
San Francisco, December 31, 1885.

The following is a copy of our annual statement of precious metals produced in the states and territories west of the Missouri river (including British Columbia, and receipts by express from the West coast states of Mexico) during 1885, which shows aggregate products as follows: Gold, \$27,290,294; silver, \$46,489,939; copper, \$7,838,036; lead, \$8,562,991. Total gross result, \$90,181,260.

As stated hitherto, the facilities afforded for the transportation of bullion, ores, and base metals, by the extension of railroads into mining districts, increase the difficulty of verifying the reports of the products from several important localities; and the general tendency is to exaggeration when the actual values are not obtainable from authentic sources; but the aggregate result, as shown herein, we think may be relied on with reasonable confidence as approximately correct.

States and Territories.	Gold dust and bullion by express.	Gold dust and bullion by other conveyances.	Silver bul- lion by express.	Ores and base bullion by freight.	Total.
California.....	\$11, 750, 490	\$587, 524	\$1, 608, 500	\$1, 090, 158	\$15, 036, 672
Nevada.....	1, 253, 355	.....	6, 575, 430	1, 384, 336	9, 213, 121
Oregon.....	396, 937	198, 468	12, 000	.....	607, 405
Washington.....	72, 700	36, 350	.....	.....	109, 050
Alaska.....	215, 000	20, 000	.....	16, 000	251, 000
Idaho.....	905, 946	200, 000	867, 410	2, 450, 000	4, 423, 356
Montana.....	2, 091, 000	.....	6, 317, 512	5, 816, 000	14, 224, 512
Utah.....	33, 362	.....	3, 061, 424	5, 831, 948	8, 926, 734
Colorado.....	2, 653, 000	.....	5, 024, 000	13, 695, 000	21, 372, 000
New Mexico.....	226, 519	60, 000	1, 107, 627	2, 431, 617	3, 825, 763
Arizona.....	726, 426	120, 000	2, 752, 068	2, 996, 652	6, 595, 146
Dakota.....	2, 506, 623	100, 000	120, 000	.....	2, 726, 623
Mexico (West Coast States)....	287, 704	.....	1, 953, 340	20, 000	2, 261, 044
British Columbia.....	488, 834	120, 000	.....	.....	668, 834
	23, 607, 896	1, 442, 342	29, 399, 311	35, 731, 711	90, 181, 260

The gross yield for 1885, shown above, segregated, is approximately as follows:

Metals.	Proportion.	Amount.
Gold.....	30. 26	\$27, 290, 294
Silver.....	51. 55	46, 489, 939
Copper.....	8. 69	7, 838, 036
Lead.....	9. 50	8, 562, 991
		90, 181, 260

ANNUAL PRODUCTS OF LEAD, COPPER, SILVER, AND GOLD IN THE STATES
AND TERRITORIES WEST OF THE MISSOURI RIVER, 1870-1885.

Year.	Production as per W. F. & Co's statements, including amounts from British Colum- bia and west coast of Mexico.	Product after deduct- ing amounts from British Columbia and west coast of Mexico.	The not product of the States and Territories west of the Missouri River, exclusive of Brit- ish Columbia and west coast of Mexico, di- vided, is as follows :			
			Lead.	Copper.	Silver.	Gold.
1870.....	\$54, 000, 000	\$52, 150, 000	\$1, 080, 000	.....	\$17, 320, 000	\$33, 750, 000
1871.....	58, 284, 000	55, 784, 000	2, 100, 000	.....	19, 286, 000	34, 398, 000
1872.....	62, 236, 959	60, 351, 824	2, 250, 000	.....	19, 924, 429	38, 177, 395
1873.....	72, 258, 693	70, 139, 860	3, 450, 000	.....	27, 483, 302	39, 206, 558
1874.....	74, 401, 045	71, 965, 610	3, 800, 000	.....	29, 699, 122	38, 466, 488
1875.....	80, 889, 057	76, 703, 433	5, 100, 000	.....	31, 635, 239	39, 968, 194
1876.....	90, 875, 173	87, 219, 859	5, 040, 000	.....	39, 292, 924	42, 886, 935
1877.....	98, 421, 754	95, 811, 582	5, 085, 250	.....	45, 846, 109	44, 880, 223
1878.....	81, 154, 622	78, 276, 167	3, 452, 000	.....	37, 248, 137	37, 576, 030
1879.....	75, 349, 501	72, 688, 888	4, 185, 769	.....	37, 032, 857	31, 470, 262
1880.....	80, 167, 936	77, 232, 512	5, 742, 390	\$898, 000	38, 033, 055	32, 559, 067
1881.....	84, 504, 417	81, 198, 474	6, 361, 902	1, 195, 000	42, 957, 613	30, 653, 959
1882.....	92, 411, 835	89, 207, 549	8, 008, 155	4, 055, 037	48, 133, 039	29, 011, 318
1883.....	90, 313, 612	84, 639, 212	8, 163, 550	5, 683, 921	42, 975, 101	27, 816, 640
1884.....	84, 975, 954	81, 633, 835	6, 834, 091	6, 086, 252	43, 529, 925	25, 183, 567
1885.....	90, 181, 260	87, 311, 382	8, 562, 991	7, 838, 036	44, 516, 599	26, 393, 756

The exports of silver during the past year to Japan, China, the Straits, &c., have been as follows: From London, \$36,979,729; from Marseilles, \$1,067,220; from Venice, \$726,000; from San Francisco, \$17,337,000.

Total, \$56,109,949, as against \$55,617,578 last year. Pounds sterling estimated at \$4.84.

PRODUCT OF GOLD AND SILVER IN THE REPUBLIC OF MEXICO FROM 1877
TO 1885.

Year.	Gold.	Silver.	Total.
1877-1878.....	\$661, 385	\$21, 451, 785	\$22, 113, 170
1878-1879.....	662, 524	21, 405, 330	22, 067, 854
1879-1880.....	474, 632	23, 383, 448	23, 858, 080
1880-1881.....	380, 301	23, 583, 135	23, 963, 436
1881-1882.....	382, 752	24, 009, 525	24, 392, 277
1882-1883.....	380, 419	22, 921, 921	23, 302, 340
1883-1884.....	420, 000	24, 240, 000	24, 660, 000
1884-1885.....	385, 000	25, 037, 356	25, 422, 356
Total.....	3, 747, 013	186, 032, 500	189, 779, 513

EXHIBIT OF COINAGE OF GOLD, SILVER, AND COPPER IN THE REPUBLIC OF MEXICO FROM THE 1ST OF JULY, 1872, TO THE 30TH OF JUNE, 1885, INDICATING APPROXIMATELY THE PRECIOUS METAL PRODUCT OF THE COUNTRY FOR THE YEARS NAMED.

Year.	Gold. Dollars.	Silver. Dollars.	Copper. Dollars.
1872-1873.....	813, 415	19, 680, 811	22, 814
1873-1874.....	866, 743	18, 846, 067	15, 966
1874-1875.....	862, 619	19, 386, 958	21, 712
1875-1876.....	809, 401	19, 454, 054	30, 654
1876-1877.....	695, 750	21, 415, 128	9, 035
1877-1878.....	691, 998	22, 084, 203	41, 364
1878-1879.....	658, 206	22, 162, 987	16, 300
1879-1880.....	521, 826	24, 018, 528	14, 035
1880-1881.....	492, 068	24, 617, 395	42, 258
1881-1882.....	452, 590	25, 146, 260	11, 972
1882-1883.....	407, 600	24, 083, 921	.....
1883-1884.....	355, 724	22, 812, 000	.....
1884-1885.....	312, 600	23, 265, 814	.....
Total	7, 940, 540	286, 974, 126	226, 110

SUMMARY.

Totals: Gold, \$7,940,540; silver, \$286,974,126; copper, \$226,110; grand total, \$295,140,776.

EXHIBIT OF THE COINAGE OF MEXICO FROM THE ESTABLISHMENT OF THE MINTS, IN 1537, TO THE END OF THE FISCAL YEAR OF 1884-1885.

	Gold.	Silver.	Copper.	Total.
COLONIAL EPOCH.				
Unmilled coin from 1537 to 1731.....	\$8, 497, 950	\$752, 067, 456	\$200, 000	\$760, 765, 406
Pillar coin, 1732 to 1771	19, 889, 014	441, 629, 211	.....	461, 518, 225
Bust coin, 1772 to 1821.....	40, 391, 447	888, 563, 989	342, 893	929, 298, 329
	68, 778, 411	2, 082, 260, 656	542, 893	2, 151, 581, 960
INDEPENDENCE.				
Iturbide's imperial bust, from 1822-'23.....	557 392	18, 575, 569	.....	19, 132, 961
Republic eagle, 1824 to 30th June, 1873.....	45, 040, 628	740, 246, 485	5, 235, 177	790, 522, 290
	45, 598, 020	758, 822, 054	5, 235, 177	809, 655, 251
REPUBLIC.				
Eagle coin, from 1st July, 1873, to 30th of June, 1885	7, 940, 540	286, 974, 126	226, 110	295, 140, 776

SUMMARY.

Colonial epoch—from 1537 to 1821, \$2,151,581,960; Independence—from 1822 to 1873, \$809,655,251; Republic—from 1873 to 1885, \$295,140,776; total, \$3,256,377,987.

We repeat from our circular of a year ago, the exhibits of production and mintage indicate a steady development of the mining interests of Mexico, and with the increasing facilities of railway communication fostering every department of industry, the outlook for the prosperity of the republic is most encouraging.

The exports of precious metals show an increase in amounts to the United States of America, indicating the steady growth of commercial relations between the two republics.

JOHN J. VALENTINE,

Vice-President and General Manager Wells, Fargo & Company.

XXIII.—ESTIMATE OF VALUES OF FOREIGN COINS, JANUARY 1, 1886.

NOTE.--The "Standard" of a given country is indicated as follows, namely: *Double*, where its standard silver coins are unlimited legal tender, the same as its gold coins; *Single gold* or *Single silver*, as its standard coins of one or of the other metal are unlimited legal tender. The par of exchange of the monetary unit of a country with a single gold, or a double, standard is fixed at the value of the gold unit as compared with the United States gold unit. In the case of a country with a single silver standard, the par of exchange is computed at the mean price of silver in the London market for the three months ending December 24, 1885, as per daily cable dispatches to the Bureau of the Mint.

Country.	Monetary unit.	Standard.	Par of exchange or equivalent value in terms of U. S. gold dollar.	Standard coin.
Argentine Republic	Peso.....	Double.....	\$0. 96. 5	Gold, $\frac{1}{2}$ argentine and argentine; silver, peso and divisions.
Austria.....	Florin.....	Single silver..	. 37. 1	Gold, 4 and 8 florin, 1 and 4 ducat; silver, 1 and 2 florin.
Belgium.....	Franc.....	Double.....	. 19. 3	Gold, 10 and 20 franc; silver, 5 franc.
Bolivia.....	Boliviano.....	Single silver..	. 75. 1	Boliviano and divisions.
Brazil.....	Milreis of 1000 reis ...	Single gold ...	. 54. 6	Gold, 5, 10, and 20 milreis; silver, $\frac{1}{2}$, 1, and 2 milreis.
British Possessions, N. A.	Dollar.....	Single gold ...	1. 00	
Chili.....	Peso.....	Double.....	. 91. 2	Gold, escudo, doubloon, and condor; silver, peso and divisions.
Cuba.....	Peso.....	Double.....	. 93. 2	Gold, doubloon; silver, peso.
Denmark.....	Crown.....	Single gold ...	. 26. 8	Gold, 10 and 20 crowns.
Ecuador.....	Peso.....	Single silver..	. 75. 1	Peso.
Egypt.....	Piastre.....	Single gold ...	. 04. 9	Gold, 25, 50, and 100 piastres.
France.....	Franc.....	Double.....	. 19. 3	Gold, 5, 10, 20, 40, 50, and 100 francs; silver, 5 franc.
German Empire....	Mark.....	Single gold ...	. 23. 8	Gold, 5, 10, and 20 marks.
Great Britain.....	Pound sterling.....	Single gold ...	4. 86. 6 $\frac{1}{2}$	Gold, $\frac{1}{2}$ and 1 sovereign.
Greece.....	Drachma.....	Double.....	. 19. 3	Gold, 5, 10, 20, 50, and 100 drachmas; silver, 5 drachma.
Hayti.....	Gourde.....	Double.....	. 96. 5	Gold, 1, 2, 5, and 10 gourdes; silver, gourde.
India.....	Rupce of 16 annas.....	Single silver..	. 35. 7	Gold, $\frac{1}{2}$, $\frac{3}{4}$, and mohur; silver, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, and rupce.
Italy.....	Lira.....	Double.....	. 19. 3	Gold, 5, 10, 20, 50, and 100 liras; silver, 5 liras.
Japan.....	Yen.....	Single silver..	. 81. 0	Gold, 1, 2, 5, 10, and 20 yen; silver, yen.
Liberia.....	Dollar.....	Single gold ...	1. 00	

XXIII.—ESTIMATE OF VALUES OF FOREIGN COINS, JANUARY 1, 1886—Cont'd.

Country.	Monetary unit.	Standard.	Par of exchange or equivalent value in terms of U. S. gold dollar.	Standard coin.
Mexico	Dollar	Single silver..	.81.6	Gold, 1, 2½, 5, 10, and 20 pesos; silver, peso and divisions.
Netherlands	Florin	Double .....	.40.2	Gold, 10 florin, ducat, and double ducat; silver, ½, 1, and 2½ florin.
Norway.....	Crown	Single gold ...	.26.8	Gold, 10 and 20 crowns.
Peru.....	Sol.....	Single silver..	.75.1	Gold, 1, 2, 5, 10, and 20 sol; silver, sol and divisions.
Portugal.....	Milreis of 1,000 reis ...	Single gold ...	1.08	Gold, 1, 2, 5, and 10 mil-reis.
Russia	Rouble of 100 copecks.	Single silver..	.60.1	Gold, 3 and 5 roubles; silver, ½, ¼, and 1 rouble.
Spain	Peseta of 100 centimes	Double .....	.19.3	Gold, 2, 4, and 10 escudos; silver, 5 peseta.
Sweden	Crown	Single gold ...	.26.8	Gold, 10 and 20 crowns.
Switzerland	Franc.....	Double .....	.19.3	Silver, 5 franc.
Tripoli	Mahbub of 20 piastres	Single silver..	.67.7	
Turkey	Piastre	Single gold ...	.04.4	Gold, 25, 50, 100, 250, and 500 piastres.
U. S. Colombia	Peso	Single silver..	.75.1	Gold, 10 and 20 pesos; silver, peso.
Venezuela	Belivar	Double .....	.19.3	Gold, 5, 10, 20, 50, and 100 bolivars; silver, bolivar.

XXIV.—STATEMENT SHOWING THE COINAGE, IMPORTS,

Fiscal years.	Coinage, mint at Philadel- phia.	Coinage, mints at San Fran- cisco and Carson.	Total coinage.	Imports at New York.	Imports at San Fran- cisco.	Total imports.	Total coinage and imports.
1874.....	\$1,058,200	\$2,530,700	\$3,588,900	.....	.....	.....	\$3,588,900
1875.....	476,800	5,220,700	5,697,500	.....	.....	.....	5,697,500
1876.....	280,050	5,852,000	6,132,050	.....	.....	.....	6,132,050
1877.....	899,900	8,263,000	9,162,900	.....	.....	.....	9,162,900
1878.....	2,386,010	8,992,000	11,378,010	.....	.....	.....	11,378,010
1879.....	642	.....	642	*\$1,200,000	.....	\$1,200,000	1,200,642
1880.....	2,473	.....	2,473	699,080	\$83,935	783,015	785,488
1881.....	1,083	.....	1,083	60,797	31,000	91,797	92,880
1882.....	1,102	.....	1,102	.....	.....	.....	1,102
1883.....	1,000	.....	1,000	.....	.....	.....	1,000
1884.....	264	.....	264	.....	.....	.....	264
1885.....	.....	.....	.....	.....	.....	.....	.....
Total	5,107,524	30,858,400	35,965,924	1,959,877	114,935	2,074,812	38,040,736

* Estimated from imports of silver coin from China to England, and from the latter country to the United States.

AND EXPORTS OF TRADE DOLLARS BY FISCAL YEARS.

Exports at New York.	Exports at San Francisco.	Exports at other ports.	Total exports.	Total imports and coinage.	Excess of imports and coin- age over exports.	Excess of exports over im- ports and coinage.	Net ex- cess of coinage and im- ports over exports.
†\$900,000	†\$2,100,000	-----	\$3,000,000	\$3,588,900	\$588,900	-----	-----
†400,000	†4,400,000	-----	4,800,000	5,697,500	897,500	-----	-----
†280,000	†4,500,000	-----	4,780,000	6,132,050	1,352,050	-----	-----
417,938	8,254,658	-----	8,672,596	9,162,900	490,304	-----	-----
937,015	4,228,991	-----	5,166,006	11,378,010	6,212,004	-----	-----
21,875	1,216,874	-----	1,238,749	1,200,642	-----	\$38,107	-----
-----	43,383	-----	43,383	785,488	742,105	-----	-----
-----	20	-----	20	92,880	92,860	-----	-----
-----	-----	\$3,600	3,600	1,102	-----	2,498	-----
-----	-----	1,000	1,000	1,000	-----	-----	-----
225,500	-----	-----	225,500	264	-----	225,236	-----
1,055,600	17,550	-----	1,073,150	-----	-----	1,073,150	-----
4,237,928	24,761,476	4,600	29,004,004	38,040,736	10,375,723	1,338,991	\$9,036,732

Estimated from exports of silver coin to England, Hong-Kong, China, and Japan.

NUMBER OF TRADE DOLLARS COINED, IMPORTED, AND EXPORTED PRIOR TO THE JOINT RESOLUTION OF JULY 22, 1876, AND SINCE.

	Prior to de- monetization, July, 1876.	From July, 1876, to June 30, 1878.	From July 1, 1878, to date. (Proof pieces.)	Total.
Coined.....	15, 631, 000	20, 328, 360	6, 564	35, 965, 924
Imported		2, 074, 812		2, 074, 812
Exported	12, 580, 000	16, 424, 004		29, 004, 004
Excess of coinage and imports over exports.....	3, 051, 000	5, 985, 732		9, 036, 732

RECAPITULATION.

Coinage prior to July 22, 1876.....	\$15, 631, 000
Exported prior to July 22, 1876	12, 580, 000
Balance not exported	\$3, 051, 000
Coinage since July 22, 1876	20, 334, 924
Imported since July 22, 1876	2, 074, 812
Total	22, 409, 736
Exported since July 22, 1876	16, 424, 004
Balance not exported	5, 985, 732
Total not exported.....	9, 036, 732
Minimum remelted at United States mints	500, 000
Probably taken out by Chinese	1, 500, 000
	2, 000, 000
Estimated amount in the country.....	7, 036, 732

XXV.—NICKEL COINAGE OF THE UNITED STATES DURING THE CALENDAR YEAR 1885.

Denomination.	Pieces.	Value.	Pure nickel consumed.*	Average cost per ounce.
			<i>Troy ounces.</i>	
Three-cent coins.....	\$4, 790	\$143 70	} 58, 615. 82	\$0 05 $\frac{7}{16}$
Five-cent coins	1, 476, 490	73, 824 50		
Total	1, 481, 280	73, 968 20		

* Imported German nickel.

XXVI.— WORLD'S PRODUCTION OF GOLD AND SILVER.**

[Compiled from official statistics furnished by the

Countries.	1882.			
	Gold.		Silver.	
	<i>Kilos.</i>	<i>Dollars.</i>	<i>Kilos.</i>	<i>Dollars.</i>
United States.....	48,902	32,500,000	1,128,083	46,800,000
Russia	35,913	23,867,935	7,781	323,427
Australasia	48,081	31,955,017	2,011	83,592
Mexico	1,409	936,223	703,508	29,237,798
Germany	376	249,890	214,982	8,934,652
Austria-Hungary	61,580	1,050,068	647,118	1,958,224
Sweden	17	11,298	1,500	62,350
Norway.....			5,893	244,954
Italy.....	d109	72,375	d432	17,949
Spain			e74,500	3,096,220
Turkey	10	6,646	2,164	89,916
Argentine Republic.....	f118	78,546	f10,109	420,225
Colombia	5,802	3,856,000	18,283	760,000
Bolivia.....	g109	72,375	g264,677	11,000,000
Chili	245	163,000	128,106	5,325,000
Brazil.....	g1,116	741,694		
Japan .....	||952	632,520	||21,121	877,772
Africa	a3,000	1,993,800		
Venezuela	3,904	2,595,077		
Dominion of Canada	g1,648	1,094,926	g1,641	68,205
France.			14,291	594,053
Peru	h179	119,250	h45,909	1,908,000
Total	153,470	101,996,640	2,690,109	111,802,337

*4 The bullion product of the world, as given for the census year in Table CC, volume 13, page 381 of the United States Census of 1880, repeats a clerical error in the Director's Report of 1880, but corrected in subsequent reports, namely: in estimating the product of the rest of South America "for 1877, 1878, and 1879, the estimate of Soetbeer of 250,000 kilograms was converted into \$1,039,190 instead of \$10,391,900." The error was corrected in the Report of the Director of the Mint for 1881.

* Estimated same as official statement for 1882.

|| Estimated same as official for 1883.

XXVI.—WORLD'S PRODUCTION OF GOLD AND SILVER.

countries named, except when otherwise stated.]

1883.				1884.			
Gold.		Silver.		Gold.		Silver.	
<i>Kilos.</i>	<i>Dollars.</i>	<i>Kilos.</i>	<i>Dollars.</i>	<i>Kilos.</i>	<i>Dollars.</i>	<i>Kilos.</i>	<i>Dollars.</i>
45, 140	30, 000, 000	1, 111, 457	46, 200, 000	46, 343	30, 800, 000	1, 174, 205	48, 800, 000
*35, 913	23, 867, 935	*7, 781	323, 427	32, 829	21, 818, 304	9, 336	388, 000
44, 404	29, 511, 199	13, 609	149, 992	46, 259	30, 743, 731	4, 530	188, 303
1, 438	955, 639	711, 347	29, 568, 576	1, 780	1, 183, 137	655, 868	27, 257, 885
457	303, 722	230, 694	9, 589, 300	555	368, 853	248, 115	10, 311, 659
1, 638	1, 088, 615	48, 708	2, 024, 645	1, 658	1, 101, 907	49, 424	2, 054, 061
37	24, 590	1, 583	65, 800	19	12, 627	1, 816	75, 472
		5, 645	234, 645			6, 387	265, 490
<i>d</i> 109	72, 375	<i>d</i> 432	17, 949	<i>d</i> 109	72, 375	<i>d</i> 432	17, 949
		<i>e</i> 74, 500	3, 096, 220			3, 562	148, 000
*10	6, 646	*2, 164	89, 916	*10	6, 646	*2, 164	89, 916
<i>f</i> 118	78, 546	<i>f</i> 10, 109	420, 225	<i>f</i> 118	78, 546	<i>f</i> 10, 109	420, 225
*5, 802	3, 856, 000	*18, 283	760, 000	*5, 802	3, 856, 000	*18, 286	760, 000
<i>g</i> 109	72, 375	384, 985	16, 000, 000	<i>g</i> 109	72, 375	||384, 985	16, 000, 000
*245	163, 000	*128, 106	5, 325, 000	500	332, 300	160, 000	6, 649, 600
952	632, 520			||952	632, 520		
256	170, 270	21, 121	877, 772	||256	170, 270	||21, 121	877, 772
<i>a</i> 3, 000	1, 993, 800			<i>a</i> 3, 000	1, 993, 800		
<i>c</i> 5, 022	3, 338, 058			7, 033	4, 674, 131		
1, 435	954, 000	<i>g</i> 1, 641	68, 205	||1, 435	954, 000	<i>g</i> 1, 641	68, 205
		6, 356	264, 275			5, 905	245, 412
<i>h</i> 179	119, 250	<i>h</i> 45, 909	1, 908, 000	179	119, 250	45, 909	1, 908, 000
146, 264	97, 208, 540	2, 824, 430	116, 983, 947	148, 946	98, 990, 772	2, 803, 795	116, 525, 949

a Estimated by Dr. A. Soetbeer, 1879.*b* Official for Hungary, with former annual production for Austria added.*c* Report of Consul Dalton, Consular Report for May, 1884, page 394.*d* Estimated same as official statement for 1877.*e* Estimated same as official statement for 1880.*f* Estimated same as official statement for 1879.*g* Estimated same as official statement for 1881.*h* Estimated same as official statement for 1884.

XXVII.—COINAGES OF VARIOUS COUNTRIES—CALENDAR YEARS, EXCEPT FOR INDIA, MEXICO, BRAZIL, AND JAPAN.

[Compiled from official statistics.]

Countries.	1882.		1883.		1884.	
	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.
United States	\$65, 887, 685	\$27, 972, 035	\$29, 241, 990	\$29, 245, 989	\$23, 991, 756	\$28, 534, 866
Mexico	452, 590	25, 146, 260	407, 600	24, 083, 921	328, 698	25, 377, 378
Bolivia		1, 684, 865		*1, 600, 000		
Argentine Republic			4, 530, 210	1, 715, 445		
Great Britain		1, 021, 381	6, 831, 169	6, 201, 517	11, 309, 819	3, 204, 824
Australia	18, 701, 959		19, 903, 722		22, 196, 106	
India	170, 543	29, 386, 322	67, 044	24, 927, 400		13, 847, 656
Germany	3, 167, 085	6, 407, 157	21, 002, 897	594, 564	13, 723, 494	114, 319
Austria-Hungary	2, 829, 590	3, 122, 819	2, 154, 390	5, 552, 191	1, 244, 975	3, 390, 163
France	722, 206	223, 853				23, 160
Belgium	2, 016, 117					
Italy			785, 027		62, 165	2, 121, 953
Netherlands		608, 312		81, 095		182, 910
Norway		69, 680	192, 708	37, 520		
Sweden	39, 876	17, 707	436, 619	250, 468	1, 022, 420	132, 784
Spain	1, 996, 310	10, 671, 842	3, 327, 235	10, 523, 421	4, 983, 004	6, 738, 971
Portugal	162, 000		217, 080		186, 840	
Japan	565, 645	4, 367, 393	544, 290	3, 120, 892	569, 415	3, 088, 724
Brazil	25, 508	9, 994	52, 801	23, 589		
Russia			12, 793, 575		19, 840, 548	1, 020, 786
Turkey	2, 960, 056		1, 344, 640	44, 000		
Colombia				699, 114		
Switzerland			965, 000			
Honduras		76, 314				
Persia			47, 117	605, 579		
Peru						1, 400, 949
Sandwich Islands						700, 000
China						160, 000
Total	99, 697, 170	110, 785, 934	104, 845, 114	109, 306, 705	99, 459, 240	90, 039, 443

* Approximate.

XXVIII.—DEPOSITS OF GOLD AND SILVER BULLION AT ASSAY OFFICE AT NEW YORK, FOR BARS SUPPOSED TO HAVE BEEN USED IN THE ARTS AND MANUFACTURES DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1885. FROM STATEMENT OF MR. ANDREW MASON, SUPERINTENDENT.

Classification.	Gold.	Silver.
United States coin .....	.....	\$314 51
Foreign coin	\$65,270 51	63,077 21
Foreign bullion	439,932 05	752,827 02
Plate, &c	579,289 41	184,015 32
Domestic bullion	2,026,426 85	3,680,588 00
Large gold bars exchanged for gold coin and redeposited for small bars, less the charges and fractions paid in gold coin	1,114,621 73	.....
Large gold bars exchanged for gold coin and taken by manufacturers	1,249,285 87	.....
Total	5,474,826 42	4,680,822 06

XXIX.—TABLE SHOWING THE RISE AND FALL IN PRICES OF THE PRINCIPAL COM
1850, AS

Articles.	Average prices in			
	For the six-year pe- riod, 1845- 1850.	For the year 1880.	For the year 1881.	For the year 1882.
Flour:				
Superfine.....barrel..	\$5.450	\$4.135	\$4.439	\$3.958
Rye-flour.....do.....	3.597	3.616	3.524	3.247
Corn-meal.....do.....	3.205	2.804	3.070	3.918
Wheat:				
Northern.....bushel..	1.167	1.253	1.307	1.277
Rye.....do.....	.734	.934	1.024	.833
Oats.....do.....	.416	.438	.484	.575
Corn.....do.....	.662	.547	.625	.796
Coal:				
Anthracite.....ton..	5.465	4.089	4.216	4.335
Coffee:				
Rio.....pound..	.074	.128	.116	.098
Java.....do.....	.083	.216	.173	.160
Copper:				
Pig.....do.....	.176	-----	.183	.185
Sheathing.....do.....	.223	.280	.250	.280
Cotton:				
Upland.....do.....	.084	.121	.115	.118
Fish:				
Cod.....cwt..	2.851	5.996	5.449	6.574
Mackerel.....barrel..	10.469	17.200	18.990	18.790
Hops.....pound..	.120	.197	.201	.458
Iron:				
Scotch.....ton..	31.072	24.489	24.445	26.753
Lead:				
Pig.....cwt..	4.217	4.233	4.858	4.960
Leather.....pound..	.147	.212	.234	.237
Molasses:				
New Orleans.....gallon..	.281	.370	.476	.587
Nails:				
Cut.....pound..	.043	.037	.037	.041
Wrought.....do.....	.104	.045	.049	.053
Naval stores:				
Turpentine.....gallon..	.366	.308	.470	.515
Rosin.....barrel..	.832	1.397	2.067	2.115
Paint:				
Red-lead.....cwt..	5.790	7.900	6.290	6.300
Pork:				
Mess.....barrel..	11.499	10.143	17.299	17.040
Prime.....do.....	9.299	-----	15.783	-----
Hams.....pound..	.084	.084	.116	.140
Lard.....do.....	.073	.065	.120	.119
Rice.....cwt..	3.485	6.590	6.200	5.900
Salt:				
Liverpool.....sack..	1.352	.690	.750	.750
Sugar:				
Cuba.....pound..	.072	.070	.077	.073
Loaf.....do.....	.097	.086	.100	.099
Tallow:				
American.....do.....	.075	.063	.070	.083
Tobacco:				
Manufactured.....do.....	.144	-----	.195	.176
Wool:				
Common.....do.....	.274	.254	.290	.306
Merino.....do.....	.355	.414	.454	.455
Pulled.....do.....	.279	.349	.364	.386
Average.....	-----	-----	-----	-----

Average, exclusive of copper, the recent decline of which is believed to be mainly a result of in-

MODITIES IN THE NEW YORK MARKET, TAKING THE PERIOD OF SIX YEARS, 1845-
A BASIS.

New York.			Comparison of prices of 1880 and subsequent years with the average prices of 1845-1850, expressed in 1,000.						
For the year 1883.	For the year 1884.	For the year 1885.	For the six-year pe- riod, 1845- 1850.	For the year 1880.	For the year 1881.	For the year 1882.	For the year 1883.	For the year 1884.	For the year 1885.
\$3.410	\$2.859	\$3.205	1,000	759	814	726	626	525	588
2.723	2.694	3.677	1,000	1,005	980	903	757	749	1,022
2.922	3.038	3.040	1,000	875	958	1,222	912	948	949
1.206	1.016	.970	1,000	1,074	1,120	1,094	1,033	871	831
.750	.691	.709	1,000	1,272	1,395	1,135	994	941	966
.503	.368	.361	1,000	1,053	1,163	1,382	1,209	885	868
.644	.616	.528	1,000	826	944	1,202	973	931	798
4.350	4.106	3.825	1,000	748	771	793	795	751	700
.104	.109	.093	1,000	1,730	1,568	1,324	1,405	1,473	1,257
.177	.165	.125	1,000	2,602	2,084	1,928	2,133	1,988	1,506
.160	.141	.112	1,000	-----	1,040	1,051	909	801	636
.240	.200	.160	1,000	1,256	1,121	1,256	1,076	896	717
.103	.109	.082	1,000	1,440	1,369	1,405	1,226	1,298	976
6.311	5.267	4.274	1,000	2,103	1,911	2,306	2,214	1,847	1,499
17.520	21.534	20.419	1,000	1,643	1,814	1,795	1,674	2,057	1,950
.562	.245	.134	1,000	1,641	1,675	3,816	4,683	2,042	1,117
24.000	21.618	20.630	1,000	788	787	861	772	696	664
4.340	3.822	3.925	1,000	1,004	1,152	1,176	1,029	906	931
.232	.237	.221	1,000	1,442	1,592	1,612	1,578	1,612	1,503
.529	.512	.507	1,000	1,317	1,694	2,089	1,883	1,822	1,804
.039	.038	.022	1,000	860	860	953	907	884	512
.052	.051	.035	1,000	433	471	510	500	490	337
.428	.324	.343	1,000	842	1,284	1,407	1,169	885	937
1.623	1.351	1.137	1,000	1,679	2,484	2,542	1,951	1,624	1,367
5.800	5.700	5.490	1,000	1,364	1,086	1,088	1,002	984	948
16.690	16.363	11.645	1,000	882	1,504	1,482	1,451	1,423	1,013
14.540	14.851	10.076	1,000	-----	1,696	-----	1,564	1,597	1,084
.139	.131	.108	1,000	1,000	1,381	1,667	1,655	1,560	1,286
.100	.083	.068	1,000	890	1,644	1,630	1,370	1,137	932
6.400	6.100	5.384	1,000	1,891	1,779	1,693	1,837	1,751	1,545
.710	.700	.732	1,000	510	555	555	525	518	541
.068	.053	.053	1,000	972	1,069	1,014	944	736	736
.091	.074	.069	1,000	887	1,031	1,021	938	763	711
.078	.071	.056	1,000	840	933	1,107	1,040	947	747
.180	.210	.185	1,000	-----	1,354	1,222	1,250	1,458	1,285
.302	.265	.343	1,000	927	1,058	1,117	1,102	967	1,252
.440	.409	.266	1,000	1,166	1,279	1,282	1,239	1,152	749
.381	.339	.298	1,000	1,251	1,305	1,384	1,366	1,215	1,068
-----	-----	-----	1,000	1,171	1,282	1,371	1,308	1,161	1,009
Increased production -----			1,000	1,168	1,293	1,384	1,325	1,179	1,027

XXX.—TABLE SHOWING THE RISE AND FALL IN PRICES OF THE PRINCIPAL COM
1870-1872, AS A BASIS, AND THE

Articles.	Average gold prices			
	For the three-year period, 1870- 1872.	For the year 1880.	For the year 1881.	For the year 1882.
Flour :				
Superfine barrel..	\$5. 046	\$4. 135	\$4. 439	\$3. 958
Rye-flour barrel..	4. 579	3. 616	3. 524	3. 247
Corn-meal..... barrel..	3. 725	2. 804	3. 070	3. 918
Wheat :				
Northern..... bushel..	1. 397	1. 253	1. 307	1. 277
Rye bushel..	. 867	. 934	1. 024	. 833
Oats bushel..	. 495	. 438	. 484	. 575
Corn bushel..	. 712	. 547	. 625	. 796
Coal :				
Anthracite ton..	5. 068	4. 089	4. 216	4. 335
Coffee :				
Rio pound..	. 151	. 128	. 116	. 098
Java..... pound..	. 185	. 216	. 173	. 160
Cotton :				
Upland pound..	. 176	. 121	. 115	. 118
Fish :				
Cod cwt..	5. 407	5. 996	5. 449	6. 574
Mackerel barrel..	15. 968	17. 200	18. 990	18. 790
Hops pound..	. 247	. 197	. 201	. 458
Iron :				
Scotch..... ton..	34. 554	24. 489	24. 445	26. 753
Lead :				
Pig..... cwt..	5. 702	4. 233	4. 858	4. 960
Leather..... pound..	. 270	. 212	. 234	. 237
Molasses :				
New Orleans..... gallon..	. 603	. 370	. 476	. 587
Nails :				
Cut..... pound..	. 041	. 037	. 037	. 041
Naval stores :				
Turpentine gallon..	. 476	. 308	. 470	. 515
Rosin barrel..	2. 689	1. 397	2. 067	2. 115
Paint :				
Red-lead cwt..	8. 158	7. 900	6. 290	6. 300
Pork :				
Mess..... barrel..	16. 954	10. 143	17. 299	17. 040
Hams..... pound..	. 120	. 084	. 116	. 140
Lard..... pound..	. 105	. 065	. 120	. 119
Rice cwt..	7. 279	6. 590	6. 200	5. 900
Salt :				
Liverpool sack..	2. 133	. 690	. 750	. 750
Sugar :				
Cuba pound..	. 077	. 070	. 077	. 073
Loaf pound..	. 109	. 086	. 100	. 099
Tallow :				
Americau pound..	. 082	. 063	. 070	. 083
Wool :				
Common pound..	. 263	. 254	. 290	. 306
Merino pound..	. 550	. 414	. 454	. 455
Pulled pound..	. 426	. 349	. 364	. 386
Average				
AVERAGE LONDON PRICE OF SILVER PER OUNCE FINE.....	1.325	1.145	1.138	1.136

MODITIES IN THE NEW YORK MARKET, TAKING THE PERIOD OF THREE YEARS,
AVERAGE PRICE OF SILVER EACH YEAR.

in New York.			Comparison of prices of 1880 and subsequent years, with the average prices of 1870-1872, expressed in 1,000.						
For the year 1883.	For the year 1884.	For the year 1885.	For the three-year period, 1870-1872.	For the year 1880.	For the year 1881.	For the year 1882.	For the year 1883.	For the year 1884.	For the year 1885.
\$3.410	\$2.859	\$3.205	1,000	819	880	784	676	567	635
2.723	2.694	3.677	1,000	790	769	709	595	588	803
2.922	3.038	3.040	1,000	753	824	1,052	784	816	816
1.206	1.016	.970	1,000	897	936	914	863	727	694
.730	.691	.709	1,000	1,077	1,181	961	842	797	818
.503	.368	.361	1,000	885	978	1,162	1,016	743	729
.644	.616	.528	1,000	768	878	1,118	904	865	742
4.350	4.106	3.825	1,000	807	832	855	858	810	755
.104	.109	.093	1,000	847	768	649	689	722	616
.177	.165	.125	1,000	1,168	935	865	957	892	676
.103	.109	.082	1,000	687	653	670	585	619	466
6.311	5.267	4.274	1,000	1,109	1,008	1,216	1,167	974	790
17.520	21.534	20.419	1,000	1,077	1,189	1,177	1,097	1,349	1,279
.562	.245	.134	1,000	798	814	1,854	2,275	992	543
24.000	21.618	20.630	1,000	709	707	774	695	626	597
4.340	3.822	3.925	1,000	742	852	870	761	670	688
.232	.237	.221	1,000	785	867	878	859	878	819
.529	.512	.507	1,000	614	789	973	877	849	841
.039	.038	.022	1,000	902	902	1,000	951	927	537
.428	.324	.343	1,000	647	987	1,082	899	681	721
1.623	1.351	1.137	1,000	520	769	787	604	502	423
5.800	5.700	5.490	1,000	968	771	772	711	699	673
16.690	16.363	11.645	1,000	598	1,020	1,005	984	965	687
.139	.131	.108	1,000	700	967	1,167	1,158	1,092	900
.100	.083	.068	1,000	619	1,143	1,133	952	790	648
6.400	6.100	5.384	1,000	905	852	811	879	838	740
.710	.700	.732	1,000	323	352	352	333	328	343
.068	.053	.053	1,000	909	1,000	948	883	688	688
.091	.074	.069	1,000	789	917	908	835	679	633
.078	.071	.056	1,000	768	854	1,012	951	866	683
.302	.265	.343	1,000	966	1,103	1,163	1,148	1,008	1,304
.440	.409	.266	1,000	753	825	827	800	744	484
.381	.339	.298	1,000	819	854	906	894	796	700
-----	-----	-----	1,000	803	884	950	893	791	711
1.110	1.113	1.064							

XXXI.—RATIO OF SILVER TO GOLD EACH YEAR SINCE 1687.

[NOTE.—From 1687 to 1832 the ratios are taken from Dr. A. Soetbeer; from 1833 to 1878 from Pixley and Abell's Tables; and from 1878 to 1885 from daily telegrams from London to the Bureau of the Mint.]

Year.	Ratio.	Year.	Ratio.	Year.	Ratio.	Year.	Ratio.	Year.	Ratio.	Year.	Ratio.
1687..	14. 94	1721..	15. 05	1754..	14. 48	1787..	14. 92	1820..	15. 62	1853..	15. 33
1688..	14. 94	1722..	15. 17	1755..	14. 68	1788..	14. 65	1821..	15. 95	1854..	15. 33
1689..	15. 02	1723..	15. 20	1756..	14. 94	1789..	14. 75	1822..	15. 80	1855..	15. 38
1690..	15. 02	1724..	15. 11	1757..	14. 87	1790..	15. 04	1823..	15. 84	1856..	15. 38
1691..	14. 98	1725..	15. 11	1758..	14. 85	1791..	15. 05	1824..	15. 82	1857..	15. 2
1692..	14. 92	1726..	15. 15	1759..	14. 15	1792..	15. 17	1825..	15. 70	1858..	15. 38
1693..	14. 83	1727..	15. 24	1760..	14. 14	1793..	15. 00	1826..	15. 76	1859..	15. 19
1694..	14. 87	1728..	15. 11	1761..	14. 54	1794..	15. 37	1827..	15. 74	1860..	15. 29
1695..	15. 02	1729..	14. 92	1762..	15. 27	1795..	15. 55	1828..	15. 78	1861..	15. 50
1696..	15. 00	1730..	14. 81	1763..	14. 99	1796..	15. 65	1829..	15. 78	1862..	15. 35
1697..	15. 20	1731..	14. 94	1764..	14. 70	1797..	15. 41	1830..	15. 82	1863..	15. 37
1698..	15. 07	1732..	15. 09	1765..	14. 83	1798..	15. 59	1831..	15. 72	1864..	15. 37
1699..	14. 94	1733..	15. 18	1766..	14. 80	1799..	15. 74	1832..	15. 73	1865..	15. 44
1700..	14. 81	1734..	15. 39	1767..	14. 85	1800..	15. 68	1833..	15. 93	1866..	15. 43
1701..	15. 07	1735..	15. 41	1768..	14. 80	1801..	15. 46	1834..	15. 73	1867..	15. 57
1702..	15. 52	1736..	15. 18	1769..	14. 72	1802..	15. 26	1835..	15. 80	1868..	15. 59
1703..	15. 17	1737..	15. 02	1770..	14. 62	1803..	15. 41	1836..	15. 72	1869..	15. 60
1704..	15. 22	1738..	14. 91	1771..	14. 66	1804..	15. 41	1837..	15. 83	1870..	15. 57
1705..	15. 11	1739..	14. 91	1772..	14. 52	1805..	15. 79	1838..	15. 85	1871..	15. 57
1706..	15. 27	1740..	14. 94	1773..	14. 62	1806..	15. 52	1839..	15. 62	1872..	15. 63
1707..	15. 44	1741..	14. 92	1774..	14. 62	1807..	15. 43	1840..	15. 62	1873..	15. 92
1708..	15. 41	1742..	14. 85	1775..	14. 72	1808..	16. 08	1841..	15. 70	1874..	16. 17
1709..	15. 31	1743..	14. 85	1776..	14. 55	1809..	15. 96	1842..	15. 87	1875..	16. 59
1710..	15. 22	1744..	14. 87	1777..	14. 54	1810..	15. 77	1843..	15. 93	1876..	17. 88
1711..	15. 29	1745..	14. 98	1778..	14. 68	1811..	15. 53	1844..	15. 85	1877..	17. 22
1712..	15. 31	1746..	15. 13	1779..	14. 80	1812..	16. 11	1845..	15. 92	1878..	17. 94
1713..	15. 24	1747..	15. 26	1780..	14. 72	1813..	16. 25	1846..	15. 90	1879..	18. 40
1714..	15. 13	1748..	15. 11	1781..	14. 78	1814..	15. 04	1847..	15. 80	1880..	18. 05
1715..	15. 11	1749..	14. 80	1782..	14. 42	1815..	15. 26	1848..	15. 85	1881..	18. 16
1716..	15. 09	1750..	14. 55	1783..	14. 48	1816..	15. 28	1849..	15. 78	1882..	18. 19
1717..	15. 13	1751..	14. 39	1784..	14. 70	1817..	15. 11	1850..	15. 70	1883..	

XXXII.—HIGHEST, LOWEST, AND AVERAGE PRICE OF BAR SILVER IN LONDON PER OUNCE BRITISH STANDARD (925), SINCE 1833, AND THE EQUIVALENT IN UNITED STATES GOLD COIN OF AN OUNCE 1,000 FINE, TAKEN AT THE AVERAGE PRICE.

Calendar year.	Lowest quotation.	Highest quotation.	Average quotation.	Value of a fine ounce at average quotation.	Calendar year.	Lowest quotation.	Highest quotation.	Average quotation.	Value of a fine ounce at average quotation.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>Dollars.</i>		<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>Dollars.</i>
1833	58 $\frac{3}{4}$	59 $\frac{7}{8}$	59 $\frac{3}{16}$	1. 29, 7	1860	61 $\frac{1}{4}$	62 $\frac{3}{8}$	61 $\frac{1}{8}$	1. 35, 2
1834	59 $\frac{3}{4}$	60 $\frac{3}{4}$	59 $\frac{1}{2}$	1. 31, 3	1861	60 $\frac{1}{2}$	61 $\frac{1}{8}$	60 $\frac{1}{8}$	1. 33, 3
1835	59 $\frac{1}{4}$	60	59 $\frac{1}{8}$	1. 30, 8	1862	61	62 $\frac{1}{8}$	61 $\frac{7}{16}$	1. 34, 6
1836	59 $\frac{5}{8}$	60 $\frac{3}{8}$	60	1. 31, 5	1863	61	61 $\frac{3}{8}$	61 $\frac{3}{8}$	1. 34, 5
1837	59	60 $\frac{3}{8}$	59 $\frac{9}{16}$	1. 30, 5	1864	60 $\frac{5}{8}$	62 $\frac{1}{2}$	61 $\frac{3}{8}$	1. 34, 5
1838	59 $\frac{1}{2}$	60 $\frac{1}{2}$	59 $\frac{1}{2}$	1. 30, 4	1865	60 $\frac{1}{2}$	61 $\frac{5}{8}$	61 $\frac{1}{16}$	1. 33, 8
1839	60	60 $\frac{3}{8}$	60 $\frac{3}{8}$	1. 32, 3	1866	60 $\frac{3}{8}$	62 $\frac{1}{4}$	61 $\frac{1}{8}$	1. 33, 9
1840	60 $\frac{1}{8}$	60 $\frac{3}{4}$	60 $\frac{3}{8}$	1. 32, 3	1867	60 $\frac{3}{8}$	61 $\frac{1}{4}$	60 $\frac{9}{16}$	1. 32, 8
1841	59 $\frac{3}{4}$	60 $\frac{3}{8}$	60 $\frac{1}{16}$	1. 31, 6	1868	60 $\frac{1}{8}$	61 $\frac{1}{8}$	60 $\frac{1}{2}$	1. 32, 6
1842	59 $\frac{1}{4}$	60	59 $\frac{7}{16}$	1. 30, 3	1869	60	61	60 $\frac{7}{16}$	1. 32, 5
1843	59	59 $\frac{5}{8}$	59 $\frac{3}{16}$	1. 29, 7	1870	60 $\frac{1}{4}$	60 $\frac{3}{4}$	60 $\frac{9}{16}$	1. 32, 8
1844	59 $\frac{1}{4}$	59 $\frac{3}{4}$	59 $\frac{1}{2}$	1. 30, 4	1871	60 $\frac{3}{16}$	61	60 $\frac{1}{2}$	1. 32, 6
1845	58 $\frac{7}{8}$	59 $\frac{7}{8}$	59 $\frac{1}{4}$	1. 29, 8	1872	59 $\frac{1}{4}$	61 $\frac{1}{8}$	60 $\frac{5}{16}$	1. 32, 2
1846	59	60 $\frac{1}{8}$	59 $\frac{5}{16}$	1. 30	1873	57 $\frac{7}{8}$	59 $\frac{1}{16}$	59 $\frac{1}{4}$	1. 29, 8
1847	58 $\frac{7}{8}$	60 $\frac{3}{8}$	59 $\frac{1}{16}$	1. 30, 8	1874	57 $\frac{1}{4}$	59 $\frac{1}{2}$	58 $\frac{5}{16}$	1. 27, 8
1848	58 $\frac{1}{2}$	60	59 $\frac{1}{2}$	1. 30, 4	1875	55 $\frac{1}{2}$	57 $\frac{5}{8}$	56 $\frac{7}{8}$	1. 24, 6
1849	59 $\frac{1}{2}$	60	59 $\frac{3}{4}$	1. 30, 9	1876	46 $\frac{3}{4}$	58 $\frac{1}{2}$	52 $\frac{3}{4}$	1. 15, 6
1850	59 $\frac{1}{2}$	61 $\frac{1}{2}$	60 $\frac{1}{16}$	1. 31, 6	1877	53 $\frac{1}{4}$	58 $\frac{1}{4}$	54 $\frac{1}{8}$	1. 20, 1
1851	60	61 $\frac{1}{8}$	61	1. 33, 7	1878	49 $\frac{1}{2}$	55 $\frac{1}{4}$	52 $\frac{9}{16}$	1. 15, 2
1852	59 $\frac{7}{8}$	61 $\frac{7}{8}$	60 $\frac{1}{2}$	1. 32, 6	1879	48 $\frac{7}{8}$	53 $\frac{1}{4}$	51 $\frac{1}{4}$	1. 12, 3
1853	60 $\frac{3}{8}$	61 $\frac{7}{8}$	61 $\frac{1}{2}$	1. 34, 8	1880	51 $\frac{5}{8}$	52 $\frac{7}{8}$	52 $\frac{1}{4}$	1. 14, 5
1854	60 $\frac{7}{8}$	61 $\frac{7}{8}$	61 $\frac{1}{2}$	1. 34, 8	1881	50 $\frac{7}{8}$	52 $\frac{7}{8}$	51 $\frac{1}{16}$	1. 13, 8
1855	60	61 $\frac{5}{8}$	61 $\frac{5}{16}$	1. 34, 4	1882	50	52 $\frac{3}{8}$	51 $\frac{1}{8}$	1. 13, 6
1856	60 $\frac{1}{2}$	62 $\frac{1}{4}$	61 $\frac{5}{16}$	1. 34, 4	1883	50—	51 $\frac{3}{16}$	50 $\frac{5}{8}$	1. 11, 0
1857	61	62 $\frac{3}{8}$	61 $\frac{3}{4}$	1. 35, 3	1884	49 $\frac{1}{2}$	51 $\frac{3}{8}$	50 $\frac{3}{4}$	1. 11, 3
1858	60 $\frac{3}{4}$	61 $\frac{7}{8}$	61 $\frac{5}{16}$	1. 34, 4	1885	46 $\frac{7}{8}$	50	48 $\frac{9}{16}$	1. 06, 48
1859	61 $\frac{1}{4}$	62 $\frac{1}{4}$	62 $\frac{1}{16}$	1. 36					

XXXIII.—STATEMENT SHOWING THE HIGHEST, LOWEST, AND AVERAGE VALUE OF THE UNITED STATES SILVER DOLLAR, MEASURED BY THE GOLD STANDARD, AND THE QUANTITY OF FINE SILVER PURCHASABLE WITH A UNITED STATES SILVER DOLLAR AT THE AVERAGE LONDON PRICE OF SILVER EACH YEAR SINCE 1873.

Calendar years.	Gold value of a silver dollar.			Grains of pure silver at average price purchasable with a United States dollar.*
	Lowest.	Highest.	Average.	
1873.....	\$0.98, 1	\$1.01, 6	\$1.00, 4	369.77
1874.....	.97, 0	1.00, 8	.98, 8	375.76
1875.....	.94, 1	.97, 7	.96, 4	385.11
1876.....	.79, 2	.99, 1	.89, 4	415.27
1877.....	.90, 2	.98, 7	.92, 9	399.62
1878.....	.83, 9	.93, 6	.89, 1	416.66
1879.....	.82, 8	.91, 1	.86, 8	427.70
1880.....	.87, 5	.89, 6	.88, 5	419.49
1881.....	.86, 2	.89, 6	.88	421.87
1882.....	.84, 7	.88, 7	.87, 8	422.83
1883.....	.84, 7	.86, 8	.85, 8	432.69
1884.....	.83, 9	.87, 1	.86, 1	431.18
1885.....	.79, 4	.84, 7	.82, 3	451.09

*371.25 grains of pure silver in a Silver Dollar.

XXXIV.—STATEMENT OF GOLD AND SILVER ARTICLES, BOTH FOR EXPORTATION AND FOR USE IN FRANCE, PRESENTED TO BUREAU OF GUARANTY FOR STAMPING OR VERIFICATION.

[From "Annuaire de l'Économie Politique et de la Statistique," for 1885.]

DOMESTIC MANUFACTURES OF LEGAL FINENESS.

Bureaus of guaranty.	Stamped articles.			
	Gold.		Silver.	
	Total weight in hecto- grams.	Value.	Total weight in hecto- grams.	Value.
Bellegarde				
Marseilles	2, 864	\$190, 341	3, 279	\$13, 608
Besançon	17, 241	1, 145, 837	84, 595	351, 069
Pontarlier				
Montbéliard				
Nancy	69	4, 586	10, 416	43, 226
Lyons	9, 940	660, 612	8, 309	34, 482
Paris	60, 288	4, 006, 740	592, 520	2, 458, 958
Other bureaus	8, 944	549, 418	34, 648	143, 789
Total	99, 346	6, 602, 534	733, 767	3, 045, 133

Bureaus of guaranty.	Articles exported with drawback of stamp tax.			
	Gold.		Silver.	
	Total weight in hecto- grams.	Value.	Total weight in hecto- grams.	Value.
Bellegarde	218	\$14, 488	398	\$1, 651
Marseilles	199	13, 226	233	967
Besançon	150	9, 969	314	1, 303
Pontarlier				
Montbéliard				
Nancy	12	798	959	3, 980
Lyons	259	17, 213	336	1, 394
Paris	3, 070	204, 032	13, 067	54, 228
Other bureaus	292	19, 406	85	353
Total	4, 200	279, 132	15, 392	63, 876

XXXV.—TABLE SHOWING FOR EACH YEAR THE NOMINAL VALUE OF ALL

Years.	PIECES OF GOLD.				PIECES OF SILVER	
	10 francs.	25 francs.	20 francs.	Total	20 centimes.	$\frac{1}{4}$ fra
1832						
1833						
1834						
1835						188, 04
1836						160, 00
1837						
1838						
1839						
1840						
1841						
1842						
1843						
1844						2, 000
1845						241, 500
1846						
1847						
1848						
1849	371, 880	8, 037, 425		8, 037, 425		
1850	633, 270	3, 749, 575		4, 121, 455		
1851		1, 853, 875		2, 487, 145		25, 209
1852						
1853					60, 128 00	
1854					393, 010 80	
1855						
1856						
1857						
1858						
1859					173, 050 40	
1860						
1861						
1862						
1863						
1864						
1865						
1866			20, 522, 060	20, 522, 060		
1867			10, 639, 260	10, 639, 260		
1868			26, 826, 140	26, 826, 140		
1869			27, 634, 980	27, 634, 980		
1870			24, 689, 480	24, 689, 480		
1871			63, 824, 060	63, 824, 060		
1872			45, 179, 440	45, 179, 440		
1873						
1874						
1875			60, 927, 000	60, 927, 000		
1876			82, 685, 060	82, 685, 060		
1877			41, 393, 640	41, 393, 640		
1878			118, 121, 400	118, 121, 400		
1879			51, 108, 000	51, 108, 000		
1880						
1881						
1882						
1883			10, 446, 200	10, 446, 200		
1884						
1885						
Total	1, 005, 150	13, 640, 875	583, 996, 720	598, 642, 745	626, 189 20	616, 760

NATIONAL COINS MANUFACTURED AT THE BELGIUM MINT FROM 1832 TO 1885 INCLUSIVE.

PIECES OF SILVER.						Total gold and silver.
$\frac{1}{2}$ franc.	1 franc.	2 francs.	2 $\frac{1}{2}$ francs.	5 francs.	Total.	
29, 175 00	60, 836			186, 760	186, 760 00	186, 760 00
780, 023 50	481, 551	552, 712		5, 628, 330	5, 718, 341 00	5, 718, 341 00
402, 521 00	830, 698	450, 110		1, 749, 880	3, 761, 213 50	3, 761, 213 50
				1, 848, 840	3, 692, 173 75	3, 692, 173 75
275, 183 50	525, 362	600, 610		26, 015	1, 427, 170 50	1, 427, 170 50
173, 685 00	261, 041	472, 682			907, 408 00	907, 408 00
182, 000 00		1, 469, 000			1, 653, 000 00	1, 653, 000 00
792, 000 00	2, 196, 400	966, 000		401, 000	4, 596, 900 00	4, 596, 900 00
				3, 498, 005	3, 498, 005 00	3, 498, 005 00
			1, 398, 537 50	12, 581, 415	13, 979, 952 50	22, 017, 377 50
	40, 662		5, 007, 115 00	34, 610, 475	39, 658, 252 00	43, 779, 707 00
104, 785 50	162, 016		397, 880 00	26, 326, 480	27, 016, 370 50	29, 503, 515 50
				18, 539, 610	18, 539, 610 00	18, 539, 610 00
				23, 023, 380	23, 083, 508 00	23, 083, 508 00
				12, 132, 990	12, 526, 000 80	12, 526, 000 80
				90, 510	263, 560 40	263, 560 40
				4, 536, 800	4, 536, 800 00	25, 058, 860 00
403, 000 00	3, 041, 000	3, 884, 000		10, 328, 000 00	10, 328, 000 00	20, 967, 260 00
507, 000 00	6, 652, 000	7, 578, 000		18, 465, 720	33, 202, 720 00	60, 028, 860 00
537, 932 00	675, 000	4, 328, 460		32, 852, 820	38, 394, 212 00	66, 029, 192 00
	1, 393, 608			63, 287, 710	64, 681, 318 00	89, 370, 798 00
				52, 340, 375	52, 340, 375 00	116, 164, 435 00
				23, 917, 170	23, 917, 170 00	69, 096, 610 00
				10, 225, 000	10, 225, 000 00	10, 225, 000 00
				111, 704, 795	111, 704, 795 00	111, 704, 795 00
				12, 000, 000	12, 000, 000 00	72, 927, 600 00
				14, 904, 705	14, 904, 705 00	97, 589, 765 00
				10, 799, 425	10, 799, 425 00	52, 193, 065 00
						118, 121, 400 00
						51, 108, 000 00
	545, 222	235, 294			780, 516 00	780, 516 00
100, 000 00	119, 484				219, 484 00	219, 484 00
						10, 446, 200 00
296, 305 50	16, 984, 880	20, 536, 868	6, 803, 552 50	495, 678, 210	548, 542, 745 95	1, 147, 185, 490 95

**XXXVI.—QUANTITIES OF GOLD AND SILVER REGISTERED FOR DUTIES AND
EXPORTED FROM FRANCE, FROM 1860 TO 1882.**

[From "Annuaire de l'Économie Politique et de la Statistique," of the year 1885.]

TOTAL QUANTITIES REGISTERED FOR DUTIES.

Year.	Gold.		Silver.	
	<i>Hectograms.</i>	<i>Value.</i>	<i>Hectograms.</i>	<i>Value.</i>
1860.....	89,665	\$5,959,135 90	713,645	\$2,961,626 75
1861.....	89,285	5,933,881 10	701,961	2,913,138 15
1862.....	91,007	6,048,325 22	672,778	2,791,779 70
1863.....	98,586	6,552,025 56	689,474	2,861,317 10
1864.....	93,516	6,215,073 36	684,321	2,839,932 15
1865.....	92,932	6,176,260 72	662,790	2,750,578 50
1866.....	94,341	6,269,902 86	684,286	2,839,786 90
1867.....	102,729	6,827,369 34	685,453	2,844,629 95
1868.....	101,533	6,751,206 18	685,186	2,843,521 90
1869.....	118,230	7,857,565 80	739,943	3,070,763 45
1870.....	64,299	4,273,311 54	416,361	1,727,898 15
1871.....	74,072	4,922,825 12	458,103	1,901,127 45
1872.....	121,021	8,043,055 66	705,849	2,929,273 35
1873.....	113,777	7,561,619 42	671,965	2,788,654 75
1874.....	103,884	6,904,130 64	672,995	2,792,929 25
1875.....	116,556	7,746,311 76	714,986	2,967,191 90
1876.....	116,346	7,732,355 16	720,539	2,990,236 85
1877.....	111,907	7,437,339 22	703,979	2,921,512 85
1878.....	127,222	8,455,174 12	763,848	3,169,969 20
1879.....	124,079	8,246,290 34	737,950	3,062,492 50
1880.....	128,430	8,535,457 80	755,082	3,133,590 30
1881.....	145,341	9,659,362 86	820,905	3,406,755 75
1882.....	142,637	9,479,655 02	822,008	3,411,333 20

TOTAL MANUFACTURED EXPORTED.

1860.....	18,525	\$1,231,171 50	63,748	\$264,554 20
1861.....	15,907	1,057,179 22	59,837	248,323 55
1862.....	16,957	1,126,962 22	61,490	255,183 50
1863.....	16,906	1,123,572 76	66,011	273,945 65
1864.....	19,309	1,283,276 14	82,973	344,337 95
1865.....	17,674	1,174,614 04	90,596	375,973 40
1866.....	15,248	1,013,382 08	56,354	233,869 10
1867.....	15,177	1,008,663 42	51,619	214,218 85
1868.....	16,151	1,073,395 46	56,068	232,682 20
1869.....	17,094	1,136,067 24	65,609	272,277 35
1870.....	12,992	863,448 32	37,096	153,948 40
1871.....	14,902	990,386 92	55,301	229,499 15
1872.....	30,270	2,011,744 20	105,723	438,750 45
1873.....	35,411	2,353,415 06	100,411	416,705 65
1874.....	26,514	1,762,120 44	98,678	409,513 70
1875.....	36,901	2,452,440 46	96,707	401,334 05
1876.....	35,233	2,341,585 18	85,861	356,323 15
1877.....	34,274	2,277,850 04	81,764	339,320 60
1878.....	32,914	2,187,464 44	92,916	385,601 40
1879.....	37,388	2,484,806 48	88,189	365,984 35
1880.....	24,577	1,633,387 42	87,692	363,921 80
1881.....	23,378	1,553,701 88	89,412	371,059 80
1882.....	23,527	1,563,604 42	83,368	345,977 20

XXXVII.—STATEMENT OF ARTICLES IMPORTED, STAMPED, AND TAXED BY THE BUREAU OF GUARANTY, AND EXPORTATION OF JEWELRY FROM FRANCE.

[From "Annuaire de l'Économie Politique et de la Statistique" for 1885.]

Bureaus of Guaranty.	ARTICLES IMPORTED, STAMPED, AND TAXED BY BUREAU OF GUARANTY.			
	Gold.		Silver.	
	Total weight in hectograms.	Value.	Total weight in hectograms.	Value.
Bellegarde.....	5,492	\$364,998	1,249	\$5,183
Marseilles	36	2,393	645	2,677
Besançon, Pontarlier, Montbéliard.....	4,042	268,631	12,991	53,913
Nancy.....	25	1,662	3,434	14,251
Lyons	556	36,952	1,062	4,407
Paris	485	32,233	31,806	131,995
Other Bureaus.....	266	17,678	13,107	54,394
Total.....	10,902	724,547	64,294	266,820

Bureaus of Guaranty.	EXPORTATION OF JEWELRY OF ALL FINENESSES, AND WATCHES OF 4TH FINENESS, EXEMPT FROM STAMP DUTIES. (Law of January 25, 1884.)						
	Articles of all finenesses.				Gold watches, 4th fineness.		
			Silver.		Number.	Total weight in hectograms.	Value.
			Total weight in hectograms.	Value.			
Bellegarde.....							
Marseilles							
Besançon, Pontarlier, Montbéliard.....					258	26	\$1,728
Nancy.....							
Lyons							
Paris	1,560	\$103,678	6	\$25			
Other Bureaus.....	2	133	1	4	12	1	66
Total.....	1,562	103,811	7	29	270	27	1,794

XXXVIII.—PRODUCTION OF GOLD AND SILVER OF THE WORLD DURING THE CALENDAR YEAR 1885.

[Officially communicated to the Bureau of the Mint except when otherwise stated.]

Countries.	Gold.		Silver.	
	<i>Kilograms.</i>	<i>Dollars.</i>	<i>Kilograms.</i>	<i>Dollars.</i>
United States.....	47,848	31,800,000	1,241,578	51,600,000
Russia.....	38,125	25,338,218	15,554	646,424
Australasia.....	44,877	29,824,949	25,225	1,048,279
Mexico.....	1,304	866,671	772,661	32,111,778
Germany.....	³ 611	406,071	³ 230,339	9,572,888
Austria-Hungary.....	⁴ 1,658	1,101,907	449,424	2,054,061
Sweden.....	⁴ 19	12,627	⁴ 1,816	75,472
Norway.....			⁴ 6,387	265,490
Italy.....	⁵ 109	72,375	⁵ 432	17,949
Spain.....			⁴ 3,562	148,000
Turkey.....	⁶ 10	6,646	⁶ 2,164	89,916
Argentine Republic.....	⁷ 118	78,546	⁷ 10,109	420,225
Colombia.....	⁶ 5,802	3,856,000	⁶ 18,286	760,000
Bolivia.....	⁸ 109	72,375	⁹ 384,985	16,000,000
Chili.....	⁴ 500	332,300	⁴ 160,000	6,649,600
Brazil.....	¹⁰ 898	596,740		
Japan.....	17	11,006	23,089	959,560
Africa.....	¹¹ 2,500	1,661,500		
Venezuela.....	7,033	4,674,132		
British Columbia.....	¹² 1,084	720,650		
France.....			⁴ 5,905	245,412
Peru.....	226	150,000	47,822	1,987,500
Great Britain.....		35	7,608	316,230
Total.....	152,848	101,582,748	3,006,946	124,968,784

³ Officially communicated. Includes foreign ore smelted. Production of Prussian States officially reported in *Zeitschrift f. d. Berg-Huetten-und-Salinen Wesen* as Gold, kilos, 130, Silver 195,034.

⁴ Estimated the same as production officially communicated for 1884.

⁵ Estimated the same as production officially communicated for 1877.

⁶ Estimated the same as production officially communicated for 1882.

⁷ Estimated the same as production officially communicated for 1879.

⁸ Estimated the same as production officially communicated for 1881.

⁹ Estimated the same as production officially communicated for 1883.

¹⁰ Product of two mines only. *Financial and Mining Record*, July 3, 1886.

¹¹ Estimated from imports of gold to England and India.

¹² *Financial and Mining Record*, July 17, 1886.

PART IV.

MISCELLANEOUS.

273

H. Ex. 290—18

CHANGES IN THE MODE OF PARTING GOLD AND SILVER BULLION, IN
THE UNITED STATES ASSAY OFFICE AT NEW YORK, FROM 1865 TO
1883; COMPARING THE USE OF NITRIC ACID, NITRIC AND SUL-
PHURIC ACIDS COMBINED, AND SULPHURIC ACID ALONE.

By ANDREW MASON,

Superintendent United States Assay office at New York.

The United States assay office at New York was established by act of Congress of March 4, 1853. It was opened for the transaction of business on October 10, 1854. Intended to accommodate the bullion interests centering in New York, it has been extensively used by miners, bankers, brokers, importers, manufacturers, jewelers, &c., and proved a convenience to the public generally throughout the United States. Any possessor of bullion, the value of the gold and silver in which is \$100 or over, can deposit it and receive payment for the gold in coin or fine bars, and for the silver in fine or standard silver bars. These gold and silver bars have their weight and fineness stamped on them, and on the gold bars the value also is stamped. They have largely taken the place of gold and silver coin for consumption in various arts and manufactures. The coin (always the best attainable) thus saved from destruction amounts to about \$12,000,000 annually.

To determine how much coin or bars is to be exchanged for a deposit, it is melted in a crucible by itself, and poured into iron molds. The exact proportion of gold and silver in the resulting bars is ascertained by the assay of small samples. These are taken from the gold bars by cutting. They are taken from silver deposits by dipping from the fluid metal in the crucible after a careful stirring, and granulated in cold water, each granule thus obtained being a true representative of the whole melt. This method was adopted on account of the tendency of silver when alloyed to segregate in cooling. By calculation, the proportion indicated by assay gives the amount of gold and silver in the weight of the deposit after melting. Proper deductions are made for the cost of parting, refining, &c., and the net result is paid to the depositor, as above stated.

All the deposits are transferred to the melting and refining department, for such treatment as may be needed to separate the gold from the silver and refine both.

Previous to 1865 these operations were conducted substantially as had been done in the mint at Philadelphia. Gold deposits were melted with twice their weight of fine silver cake, and the mixture, after being

well stirred in the crucible, was dipped out and poured with a gyrating motion into a tank of cold water. The metal solidified in a multitude of irregularly-shaped films (or granules), which sank into a copper colander at the bottom of the tank. The colander being lifted, the granulations were drained, weighed into "charges" of regular size, and placed in porcelain jars for treatment by nitric acid. The jars were heated by steam in leaden vats, arranged in wooden inclosures termed "houses," in the dissolving room. While the silver and other alloy was being dissolved, nitrous acid fumes were formed and conducted to the large chimney by a flue. When the action of the acid ceased, and the solution of silver, &c., was cooled, it was siphoned into a large wooden tank on the floor below, containing salt in solution.

A second charge of nitric acid was added to the gold left in the jars and heated. The second solution of silver thus obtained was taken from the gold and used in a subsequent first charge for fresh granulations. The gold was poured from the jars into filters (wooden tubs having a false bottom with many holes, and covered with filtering paper and sheeting) and washed with hot water till it was freed from silver solution and acid. When drained it was transferred to a cylinder (12-inch diameter), and compressed into cakes (or "cheeses") by means of a hydraulic press. These cakes, when dried in a steam oven, were broken up and melted in plumbago crucibles, fluxed with nitrate of soda and borax, and the gold poured into molds of various sizes. The bars thus formed, after immersion in very weak sulphuric acid and subsequent cleansing, were ready for the stamping on them of their weight, fineness, and value.

The strong solution of silver taken from the gold in the jars, with the weak solution washed from the gold in the filters, was well stirred or paddled with the salt solution in the large tank. The silver uniting with the chlorine of the salt was converted into chloride of silver. The contents of the tank were run out into a large filter (made of wood and lined with sheeting) and washed with hot water until the chloride of silver was freed from the nitrates of soda, copper, &c., and acid. The filtrate was conducted into the sewer. The chloride was transferred to leaden vats, where it was stirred with granulated zinc until the chlorine gave up its hold on the silver, forming a soluble chloride of zinc. The resulting fine silver was transferred to a filter, and washed free from the chloride of zinc with hot water, this filtrate also going to the sewer. The silver was then drained, pressed into cakes, and dried. That part of it not needed for granulating with gold deposits was melted and fluxed in plumbago crucibles and cast into bars of appropriate sizes, as had been done with the gold from which it was separated.

The silver was from 998 $\frac{M}{100}$ to 999 $\frac{M}{100}$ fine, and the weight of the bars from 10 to 1,500 ounces.

The gold was from 990 to 992 $\frac{M}{100}$ fine, and the value of the bars from \$100 to \$10,000.

On entering upon his duties as melter and refiner in 1865, it soon became apparent to the writer that a much larger quantity of silver than was needed was added to the gold deposits in the process of granulating, preparatory to treatment in acid. For instance, if gold bullion, 950M fine, required but twice its weight of silver to be added to itself, that the gold in the mixture might not prevent the acid from thoroughly exercising its solvent functions, a simple calculation demonstrated that gold bullion 350M fine would need but one-nineteenth as much silver to make the resulting proportion of silver to gold the same as in the other. While not many gold deposits were as low as 350M fine, their average fineness was far below 950M.

Besides, a long experience in assaying had made the fact familiar that gold cornets (small coils obtained in assaying) were uniformly above 999M fine; the silver added to the half-gramme (the amount used) of the sample in the process, having been such as to make the proportion of silver to gold in the button after cupellation a little less than two to one.

Assaying may be defined as parting and refining on a minute scale, the result being very accurately determined in each operation.

The possibility of a nearer approximation of the fineness of the gold parted on a large scale to that of cornets, by reducing the proportion of silver to gold in the granulations below two to one (very different from that of two parts silver to one part gold bullion), at once engaged careful attention. It seemed the more likely that this could be done, because cornets broken and reduced to a powder in boiling, owing to the silver being in excess, were of a lower fineness than perfect cornets.

By trial on the regular working scale, with a mixture adjusted to the proportion of 1.8 parts silver to one part of gold, it was found that after the nitric acid had done its work in dissolving the silver, the gold retained to a large extent the original forms of the granulations, and on melting showed a fineness of 993½M, say 2½M higher than by the old practice.

On trial of the proportion of 1.7 silver to 1 gold, the parting was incomplete, the silver being protected to some extent by the gold from the action of the acid.

To allow margin for possible want of mixture between the gold bullion and silver added, in melting for granulation, &c., the working ratio was fixed at 1.85 parts silver and other alloy to 1 part of pure gold; and a table calculated, giving the number of ounces of gold bullion at every 10 degrees of fineness needed to be combined with a fixed amount or unit of silver to make that ratio. The gold deposits were readily assorted in boxes placed in a row according to the degrees of fineness, and the proper amount weighed for each melt.

As the silver melted with the gold deposits had itself to be dissolved and then recovered from solution, the saving in expenditure for nitric acid, the reducing agents, salt and zinc, steam, coal, crucibles, labor,

&c., was large, by reason of the reduction in the amount used. During the four years from 1866 to 1869, inclusive, it was found to be over \$61,000.

But this large saving and increased fineness of the gold product were not the only results of the improved process. Serious liability to wastage of gold was lessened, if not removed entirely. The maintenance of the form of the granulations during the action of the acid prevented the dissemination of minute particles of gold in the solution of silver. Gold in that condition will float for a long time and be readily disturbed after settling. It would thus be carried with the silver solution from the porcelain jars into the tank and be mixed with the salt solution. What became of it there was evident from an early experience in adjusting accounts with the assay department. The silver obtained by a reduction of the chloride of silver formed in the process of humid assaying ought to have had a certain amount of gold from the accumulation of gold residues in the solutions of silver-deposit samples containing gold. Having demonstrated by calculation that much of it was not there, a series of experiments showed that finely-divided gold in such relationship (in the presence of free acid and salt solution) was readily dissolved. Of course, in this condition it was washed as a part of the filtrate from the chloride of silver into the sewer. From 1865 onward there was a large surplus of gold instead of a wastage.

Notwithstanding this progress, to which, from its nature, there could be no drawback (the objectionable acid fumes being reduced in the same proportion as the expenditures), it seemed unsatisfactory to have fine gold from the United States assay office refinery of a lower fineness than that obtained in European refineries.

To test practically what might be accomplished by boiling the granulations in nitric acid by the direct application of fire instead of heating by steam in the porcelain jars, a kettle was made of fine gold, after much trouble in rolling, beating, &c. Although very valuable, it was somewhat imperfect. However, it stood the operation sufficiently to show that even with a supply of good kettles it was doubtful if the gold could be raised to a higher fineness than 996 M. The gold kettle was turned into a bar.

Having noticed, in reading a laboratory experiment in which gold obtained by parting with nitric acid, on being boiled in sulphuric acid was made 999½ M fine, the method of the smaller operation was once more applied to the larger one. The trial was satisfactory, and subsequent experience proved that with all varieties of bullion one treatment by nitric acid, with a careful washing of the gold sponge and subsequent boiling of it in strong sulphuric acid, yielded gold 998 to 998½ M fine.

A few iron kettles placed on open fires, and covered with hoods connected by lead pipes with the chimney, and an inclosed iron receptacle, similarly connected, for the temporary reception of the hot sulphate of

silver poured from the kettles, constituted the additional apparatus for the new operation. The amount of labor was not materially changed.

By this substitution of a boiling in sulphuric acid for the second charge of nitric acid, a further saving in nitric acid was effected, the amount required for one charge instead of two being in the proportion of 2.39 to 3. By a calculation extending over the same four years as above (1866 to 1869, inclusive), the saving, after deducting the cost of the sulphuric acid used, was \$13,522. The value of the additional silver extracted from the gold bullion during that time was \$11,460.

The parting process thus modified, or rather changed into a new one, with such good results in efficiency and economy, continued in use till about 1871. The improvements were introduced in the mints in San Francisco and Philadelphia, and are still in use (unless recently discontinued). The saving to the Government must have been very great in the former, where, for many years, the amount of gold bullion going through the parting process was much larger than in the New York assay office, where the total saving was about \$30,000 per annum.

About 1871 a marked change began in the nature of the business. The increased production of silver in the United States caused a great increase in the amount of silver deposits, much of which contained a small proportion (in weight) of gold. The portion of this having but little base metal in it, while requiring to be parted itself, was more than sufficient for mixing with the gold bullion for granulation, instead of using cake silver from a previous parting operation. The baser portion was treated by itself. The amount of silver (and copper alloy) to be dissolved became so great that the cheapness of sulphuric acid compared with nitric acid, as a solvent, forced the conviction that if a complete substitution of the former for the latter could be effected on the premises, and without a stoppage of the work, the change ought to be made.

Hitherto the alteration or enlargement of plant had been slight. For this it needed to be radical and extended.

Gradually the old apparatus was supplanted by the new, and the building itself was strengthened by a system of strong wooden beams and pillars giving additional support to the floors.

In the separating-room, four 168-gallon cast-iron kettles, set in brick furnaces, took the place of the porcelain jars.

Ordinarily two of them were used for "gold," and two for "silver" granulations. To obtain the best results with sulphuric acid, the deposits were so combined that the gold granulations should have over two parts silver (and copper) to one part gold; and care was taken that the copper should not exceed 8 per cent. of the mixture. The silver granulations worked well when the copper alloy did not exceed 14 per cent. About 25,000 ounces could be treated in the four kettles. The acid was added to the granulations in successive portions from a reservoir on the floor above, into which it had been forced by air pressure from a receiving-cylinder in the basement. When the action of the

acid ceased (after four or five hours' boiling) a pitcher or two of waste acid (40° Baumé) from the crystallizing vats was carefully poured into each kettle to help to settle any floating gold, and the solution allowed to cool for about an hour. It was then siphoned into the silver-reducing vats on the floor below. There were four of these, two being used on each alternate day. Their depth was limited to $2\frac{1}{2}$ feet for convenience in handling their contents from the outside, and they were about 14 feet long by 6 feet wide. These replaced the two large wooden tanks for mixing the solution of silver with the salt solution, and the vats for reducing the chloride of silver with zinc used in the nitric-acid process.

To the gold left in the dissolving kettles fresh acid was added. It was then lifted out of the diluted solution of silver in cast-iron scoops (colanders) and transferred to a 60-gallon kettle, in which it was boiled in two successive charges of acid. The resulting weak solutions of silver, &c., were siphoned from the gold, and it was taken out and washed, partially by decantation in a lead-lined wooden tub (30 gallons) and afterward in a filter. It was then treated in the same way again, another kettle being used. A second repetition of the same, in which a third kettle of the same size was used, yielded gold which, when melted, fluxed, and cast into bars, was from 997 to $998\frac{1}{2}$ M fine.

A coating of bone-ash on the surface of the melted metal worked well as an absorbent of the base metal oxides, and the flux.

The weak solution of silver (strongly acid) siphoned from the gold in the three smaller kettles was used on fresh granulations in the large kettles. That which was washed from the gold by decantation and filtering ran into a leaden vat, from which it was siphoned into two tanks on a high platform on the floor below. From these (used alternately), after resting over night, and thus surely settling any gold that might be in it, the solution was run into the silver-reducing vats already mentioned, on a lower level. The filtrate (weak sulphate of copper) from washing the silver previously treated also ran into these vats. After the strong solution of silver from the large dissolving kettles had been received in them, fresh water was often added to reduce the strength of the whole to about 20° Baumé. When boiled (by means of steam) for about five hours, the silver was all deposited on the copper plates placed on the bottom and against the sides of the vats, a portion of the copper having gradually replaced the silver in the solution. The next morning this copper solution was siphoned into two large concentrating tanks on platforms on a still lower level, and the silver, after being scraped from the copper plates, was transferred to filters, where it was washed free from sulphate of copper. It was then melted, fluxed, and cast into bars 999 to $999\frac{1}{2}$ M fine.

The solution of sulphate of copper in the concentrating tanks was strengthened (by boiling) to about 40° Baumé, and run into two of a series (12) of crystallizing vats. In five or six days nearly all the sulphate of copper was deposited in the form of crystals on the sides and

bottom of the vats. The mother liquor was siphoned into a reservoir in the yard for delivery to the purchaser. The crystals, after draining, in order to fit them for packing and sale, were dissolved in water and re-crystallized in another tank, and series of vats on the floor below. From these vats the remaining mother liquor, after a strengthening of the first, and a second deposit of crystals, was raised by an ejector to one of the concentrating tanks on the floor above, and mixed with a fresh acid solution of sulphate of copper.

The capacity, shape, and position of the various tanks, vats, etc., were all adjusted from time to time to the necessities of the operations, and the nature of the space attainable. The kettles in the separating-room were covered by leaden hoods, connected successively with two chambers (each having an upper and a lower apartment, separated by a platform with several feet of coke on it) and five upright pipes (28 feet high), through which the sulphurous and sulphuric acid fumes given off in dissolving the silver had to pass before entering the chimney. These were all supplied with sprinklers. Water which had been made alkaline in sweep-washing and mixed with other waste and fresh water in a cistern was forced by a pump through these sprinklers. A damper inserted in the last pipe at its entrance into the chimney gave the means of so regulating the draft that, while it should be sufficient to keep the fumes from escaping from the kettles into the room, it should not take them too rapidly through the apparatus to prevent their absorption by the sprinkled water and conveyance to the sewer. With the whole in good order and the water-supply ample, that portion of the fumes unabsorbed and passing out of the chimney could not be felt.

A test furnace, erected for cupelling that part of the bullion containing much lead, while proving economical of acid to that extent, was very useful in the treatment of skimmings and residues generally.

The proceeds of the by-products (blue vitriol and waste acid) sold not only covered the cost of the copper used in reducing the silver, but also that of a large part of the acid.

For about ten years over 1,500,000 pounds of sulphuric acid have been used annually. As about the same weight of nitric acid would have been needed in the old process, and its price was, say, 5 cents per pound higher, the saving effected by the entire substitution of sulphuric for nitric acid in parting may fairly be estimated at over \$100,000 per annum.

As a result of these improvements the charges to depositors were reduced from time to time.

IRIDIUM IN MINT DEPOSITS.

By B. T. MARTIN,

Melter and Refiner, United States Assay Office at New York.

The small grains of osmiridium, platiniridium and allied metals of the platinum group, found in many deposits of gold (sometimes, though rarely, in silver), are in mint usage designated by the general term iridium. These grains vary greatly in form, in the proportions of the several metals, and in the amount contained in deposits at different times. Often of definite granular shape, and large enough to be useful in the arts, they appear at other times as scales and coarse powder, quite as frequently as very fine powder, the detection of which in gold by inspection is not an easy matter. The ordinary appearance of iridium in a bar of gold is specks or clots distributed through the metal, but not alloyed with it. It is most plainly marked, usually, on the top of the bar, or that last poured from the crucible.

The quantity of this metal received at the mints in deposits is not absolutely large. As compared with the amount of gold received it is indeed quite small. But viewing certain specific cases, and comparing one period with another, the amount often seems considerable. The history of this metal in mint experience shows that it became specially a matter of consideration by mint officials on the reception of the early shipments of gold from California. It was found, and for a time chiefly found, in the deposits of dust or grains from that State. The Fraser River diggings of British Columbia, in the period of their activity, furnished another source of supply. The gold grains of Central and South America have yielded and still yield a considerable showing of this substance. To deposits of this description, and from these localities, the presence of iridium was formerly almost entirely restricted; but it has become much more widely distributed. At present it is found by the mints and assay offices not only in deposits of grains, but in bars from jewelry, in ordinary bars, in amalgams, in coins and in refined gold. In fact, it is never a certainty when or where it will not make its appearance. As a result, a constant vigilance is requisite that it may not pass undetected. No figures are at hand showing the actual amounts of iridium received in and recovered from deposits at the various minting institutions of the country. In an article on the platinum metals, by Dr. Wolcott Gibbs, published in the *American Journal of Science* in 1861 (vol. 31, p. 63), Dr. John Torrey, then chief assayer at the assay office, New York, is quoted as stating that for the first year or two after the establishment of that office (1854-'56)

the proportion of osmiridium in California gold was half an ounce to a million of dollars, but that subsequently the average was seven or eight ounces to the million. In the experience of the same office during a period of eighteen years (1865-'81) an amount slightly exceeding two hundred ounces of iridium residuum was recovered from various deposits. From a given deposit of gold weighing, after melting, 143.29 ounces, there was taken out 10.50 ounces of iridium grains and 6.50 ounces of sponge platinum—about 12 per cent. From this, as perhaps a maximum, showing, individual cases scale off to a mere trace of the metal in question. The assay office at New York and the mint at San Francisco are probably the points of largest reception of iridium, and it is likely that a comparison would show the receipts of it at each of these places to be not widely different. With a liberal estimate for the other institutions and for amounts unrecovered, it will be seen that the aggregate is not large. The annoyance, however, caused by the presence of even small amounts of this metal in the gold is considerable. Separable in melting and assaying only by special treatment and liable to elude casual observation, the risk of excessive debit in weight and fineness to an accounting officer is not small. This is apparent when it is remembered that this substance is not an alloy, but is mechanically mixed with the precious metals, and, of course, if undetected is charged as gold.

Yielding no more readily to the action of single acids than to fire, it passes substantially unmodified through the acid refinery, with constant liability to issue in the refined gold, to become there an element of vexatious annoyance to the manufacturer of jewelry, plate and the like, the practical effect of it in such case being to render impossible the production of a perfectly smooth and polished surface. A costly bit of work, brought to the point of completion, has often had to be cast aside because of the discovery, in the last processes, of grains of iridium, so small as to need a magnifying glass to detect them, yet large enough to vitiate the whole work.

To prevent, as far as possible, these results great care is first taken at the mints in the inspection of the gold after melting. A double scrutiny by the assayer, first of the bar and subsequently of the cornet or residue from the assay sample, is supplemented by a similar inspection of the bar by the melter and refiner when he receives the metal from the superintendent. This accomplishes two results: the non-distribution of metal containing iridium with that free from it; and its isolation for separate treatment at the time or subsequently. Various methods have been used at the different mint institutions for the treatment of deposits thus affected. The problem is twofold, first, to promptly pass on the matter as it affects the depositor's interest (that he may not wait unduly for payment), while at the same time protecting the interest of the melter and refiner (that he may not be charged with what is not gold); second, to separate the obnoxious metal before send-

ing the gold containing it to the refinery, where, once entered, it would contaminate all metal and all apparatus, and issue, in greater or less amount, in the fine bars of gold and silver.

In solving the first element of this problem it was customary at some of the mints, in former years, to make an estimate, based on inspection, of the weight of iridium contained in a given deposit, and to deduct the amount so estimated, whether ten, twenty, or fifty one-hundredths of an ounce, from the weight of the gold after melting.

Practice, aided by some test experiments, gave a facility for very closely approximative judgments in this method of rapid disposition of a troublesome element. The practice is still continued, to some extent, in cases where it is believed but very small amounts of iridium are present. But besides the objection of inexactness, this method left the metal still open to the necessity of treatment before refining. Another method at some of the institutions, especially in cases of large deposits, was to allow the deposit to stand for some time in a molten condition undisturbed. The grains of iridium slowly settled to the bottom of the crucible, and, by careful pouring, the mass of the gold was obtained free, while the king at the bottom, containing the iridium and some gold and silver, was treated separately. This method was most successful when the grains were large and well defined. In other cases the assay cornets, or small portions of the melt, containing iridium, were dissolved, and from the proportions found the amount in the whole deposit was calculated. One objection to this method is the lack of uniformity in the distribution of the iridium through the mass of the metal.

Yet another method, practised for many years at the assay office in New York, is to melt with the bar containing iridium two or three times its weight of silver, and, after stirring, to allow the melt to stand for some time. By the addition of silver to the gold the relative gravity of the iridium is largely increased, and in the operation, if properly conducted, very fine powdery particles of it will settle with the larger grains to the bottom of the pot, and with care in pouring the bulk of the melt will be free from that substance. What remains in the crucible is subjected to further treatment.

The process in detail may be illustrated by an example. The gold bar weighs after melting, say, 100 ounces. The assay cornets show no iridium, but the bar is strongly marked. The fineness is reported at .800, which, at the weight indicated, would credit the depositor with 80 ounces of pure gold.

A correct report would be that amount less the weight of iridium contained. Two hundred ounces of silver are added, the weight being then $100 + 200 = 300$ ounces.

This is melted, and, after stirring, is permitted to stand for half to three-quarters of an hour. The crucible is then lifted from the fire, its contents, with as little disturbance as possible, poured off to within, say, 20 ounces of the entire amount contained; the crucible is re-

placed in the fire and heated until all the particles of metal on the sides and rim are sweated down into the king at the bottom; it is then taken out, and after cooling the king is removed and weighed. The bars, previously poured off, are weighed and tested for iridium, and, being found free, are assayed for gold. The king, after weighing, is tested for gold. If free from that metal the operation is completed. The showing would then be as follows:

Weight of bars equals 280 ounces, at $.0284 = 79.52$ ounces fine gold; weight of king equals 20 ounces; weight of iridium equals 0.48 ounce.

This example illustrates the method. In practice, if the bars are not free from iridium, a resettling is given, sometimes with the further addition of silver. If the king contains gold, silver is added to it and it is settled until the gold is practically eliminated, or the traces which remain are determined by assay. The results are added to the first settling. It is not usual to operate on each king for the separate extraction and determination quantitatively of the iridium residue, though this has been done with sufficient frequency to show the general correctness of the method in leaving no precious metal unaccounted for to the depositor, and as giving the iridium factor at its true value.

The kings from a number of settlings are allowed to accumulate until a convenient opportunity, when they are operated on in mass. The silver is dissolved out by nitric or sulphuric acid. The residual grains are treated with aqua-regia; the gold (if present) and the platinum are precipitated. The final grains are washed and dried. They consist of impure iridium, the further treatment of which, though of scientific interest, is not practically consistent with more pressing duties, and is not attempted. The ground has been fully covered by Dr. Gibbs (in the article already referred to) and by others.

It is an item of interest, however, that from a little more than 200 ounces of these grains, after the removal of the silver, there was obtained about 52 ounces of sponge platinum.

The final disposition of the iridium grains is also a point of interest. Some years ago a limited amount of the grains suitable for gold-pen makers' use was sold. But of late the metal recovered has not been in form to invite this custom, and in any event it is not now the policy of the Government to put this metal out upon the market again. The grains as they accumulate are sealed and stored up in the mint vaults.

Concerning the method of treatment last indicated, it may be said that it has the merit of giving, with fair degree of promptness, results which are just to the depositor and to the Government, with as little chance of error as any method. It also leaves the metal in condition for refining without further treatment, saving thus much time and trouble.

Despite, however, all the watchfulness and care taken to prevent such a result, it is doubtless the case that small quantities of iridium are occasionally taken undetected and go to the refinery and out again in

the fine metal. The risk of this is greatest in a line of deposits where, from the peculiar nature of the metal, the iridium, though present, does not show in the bar, and failing to be caught in the assay sample, passes altogether unobserved. But such instances are extremely rare, and the elimination of this objectionable metal from the deposit and the refined gold by this method is practically complete. With the precautions taken it cannot be, to any extent, a matter of loss to the Government. Its element of unavoidable trouble must be borne till science shows some easier way of dealing with it.

PART V.

MEXICO.

*PRODUCTION OF GOLD AND SILVER OF MEXICO FOR THE FISCAL
YEAR 1884-1885.*

By JOHN HEARD, JR.

It is impossible to obtain exact figures as to the total production of gold and silver of the Mexican Republic, as a considerable proportion of the total amount is exported as bullion by private individuals, or corporations whose accounts are not accessible. The following tables will, however, show the amounts which have been coined at the several Mexican mints during the year 1884-'85, as also the names of the mines to be credited with these deposits. To those figures the following may be added as supplementary information:

Exports of gold bars, ore and dust, 762.870 kilograms	\$490, 928 97
Amounts deposited in the mints, deducting sums for export and foreign gold, 583.878 kilograms	375, 742 42
	<hr/>
Total gold	866, 671 39
	<hr/> <hr/>
Silver deposited in the mints for coinage, 632,260.048 kilograms	24, 727, 058 22
Silver in bars exported	5, 881, 178 03
Silver ore in rock exported	1, 332, 896 90
Silver and gold bullion exported	18, 118 96
Sulphide of silver exported	142, 430 37
Argentiferous lead exported	8, 656 40
Products of smelting (matte, &c.) exported	1, 252 50
Argentiferous coke	187 00
	<hr/>
Total silver	32, 111, 778 38
Total gold	866, 671 39
	<hr/>
Recorded production, total gold and silver	32, 978, 450 77

The exports of precious metals were as follows:

Gold ore in rock	\$500 00
Bullion and dust.....	490, 429 45
Mexican gold coin	391, 097 23
Foreign gold coin	14, 457 00

Total export of gold	896, 483 68
----------------------------	-------------

Mexican silver coin	25, 394, 262 05
Foreign silver coin.....	97, 821 50
Silver bullion.....	5, 881, 178 03
Silver ore in rock	1, 332, 896 90
Silver and gold bullion.....	18, 118 96
Sulphide of silver	142, 430 37
Argentiferous galena.....	8, 656 40
Smelting products	1, 252 50
Argentiferous coke	187 00

Total export of silver	32, 877, 567 24
------------------------------	-----------------

Total export of gold	896, 483 68
----------------------------	-------------

Total export of gold and silver	33, 774, 050 92
---------------------------------------	-----------------

Value of gold coined in the Mexican mints, 1884-'85.....	686, 237 52
--	-------------

Value of silver coined in the Mexican mints, 1884-'85.....	26, 736, 798 82
--	-----------------

Total value of gold and silver coined in 1884-'85	27, 423, 036 34
---	-----------------

1 kilogram, Gold=\$675.416.

1 kilogram, Silver=\$40.915.

The average coinage of Mexico during the period 1875-'85 seems to have amounted to \$24,384,759.39, the lowest figure, \$20,294,110.13, corresponding to the year 1875-'76; from that time it increased regularly until, in 1883-'84, the highest figure of \$28,450,076.85 was reached; the following year shows a decrease of \$2,186,099.15, which must be attributed to the decline of mining in all parts of the republic, notwithstanding the considerable amount of capital and machinery sent there within the last three or four years. This decline has become serious enough to cause some anxiety to be felt in the city of Mexico, and the Federal Government issued circulars to the governors and prefects of all the mining districts inquiring as to the causes of the falling off in production, and asking for suggestions as to the best means of reviving this important industry. Nearly all the answers seem to point to the recent increase of taxes on mining operations as the chief cause of the present stagnation. Excessive taxation; a complicated legislation which discourages new investments and paralyzes actual operations; the want of proper roads and, in some cases, of water and men; the mismanagement and extravagance of American superintendents, are the most im-

portant among the alleged causes of the present depression. No mention is made of a falling off in the quality or quantity of ore at any of the mines, but the new state mining laws seem to meet with universal condemnation. In his message the President of the Republic "hopes that the governments of the different states will appreciate this objection, and proceed at once to remove its causes." It certainly appears to be a necessary and urgent reform.

I.—THE WEIGHT AND VALUE OF GOLD AND SILVER BULLION DEPOSITED FOR

Name of mine.	Method of treatment of the ore and weight of bullion.					
	Patio process.	Barrel amalgamation.	Leaching.	Smelting.	Pan.	Plates.
<i>State of Aguas Calientes.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Asientos.....	35.990					
<i>State of Coahuila.</i>						
Saltillo				49.710		
Sierra Mojada				42.540		
				92.250		
<i>State of Chihuahua.</i>						
Batopilas					4,568.080	
Do.....		10,126.760				
Corralitos	23.935					
Guadalupe y Calvo	393.740			720.460		
Do.....				209.430		
Guazapares.....			570.840	130.600	278.790	
Do.....				17.810		
Do.....	247.292					
Jesus Maria				380.955		
Do.....	66.904					
Justina	243.420					
Palmarejo					2,939.070	
Parral	27,178.772					
Pinos Altos.....					215.225	
Do.....	294.595					
Santa Eulalia.....				473.210		
Urique				4,966.670		
Do.....				7,175.529		
Uruáchie			4,151.830	208.890		
Do.....				5,025.070		
Uruápam					1,276.450	
Yoquivo.....	381.150					
Various.....				4,882.810		
	28,829.808	10,126.760	4,722.670	24,191.434	9,277.615	
<i>Distrito Federal.</i>						
Supplies				81.420		
Export				22,579.137		
Worn and mutilated coin ..				170.260		
Plate and Gov't tax (20 %) ..						1,778.755
						1,778.755
<i>State of Durango.</i>						
Arzate.....	587.130					
Avino	3,122.560			10.850		
Bajada.....	17.200			28.475		
Birimoa.....	40.630			594.675		

COINAGE AT THE DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85.

Silver.			Gold.		Total.	Name of mint.
Total bullion.	Equivalent in fine silver.	Value at \$39.109 per kilogram.	Weight of fine gold.	Value at \$643.529 per kilogram.		
<i>Kilograms.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>			
35.990	35.895	\$1,403 82	.....	.....	\$1,403 82	Zacatecas.
49.710	48.318	1,889 67	.....	.....	1,889 67	Do.
42.540	40.948	1,601 43	.....	.....	1,601 43	Do.
92.250	89.266	3,491 10	.....	.....	3,491 10	
4,568.080	4,382.745	171,404 78	.....	.....	171,404 78	Alamos.
10,126.760	9,731.250	380,579 45	.....	.....	380,579 45	Chihuahua.
23.935	22.072	863 21	0.735	\$472 99	1,336 20	Do.
1,114.200	1,063.249	41,582 72	17.554	11,296 46	52,879 18	Culiacan.
209.430	206.806	8,087 97	.....	.....	8,087 97	Durango.
980.230	878.068	34,340 36	.....	.....	34,340 36	Alamos.
17.810	17.204	672 85	.....	.....	672 85	Culiacan.
247.292	239.630	9,371 69	1.877	1,207 91	10,579 60	Chihuahua.
380.955	359.248	14,049 83	7.669	4,935 45	18,985 28	Alamos.
66.904	63.564	2,485 93	1.642	1,056 68	3,542 61	Chihuahua.
243.420	242.660	9,490 19	.....	.....	9,490 19	Alamos.
2,939.070	2,847.854	111,376 72	18.703	12,036 03	123,412 75	Do.
27,178.772	26,544.422	1,038,125 81	.....	.....	1,038,125 81	Chihuahua.
215.225	203.200	7,946 94	4.656	2,996 27	10,943 21	Alamos.
294.595	276.117	10,798 65	9.227	5,937 90	16,736 55	Chihuahua.
473 210	452.545	17,698 58	.....	.....	17,698 58	Do.
4,966.670	4,785.645	187,161 79	.....	.....	187,161 79	Alamos.
7,175.529	6,905.137	270,053 00	.....	.....	270,053 00	Chihuahua.
4,360.720	4,203.518	164,395 39	.....	.....	164,395 39	Alamos.
5,025.070	4,826.235	188,749 23	.....	.....	188,749 23	Chihuahua.
1,276.450	1,226.814	47,979 47	14.148	9,104 46	57,083 93	Do.
381.150	361.390	14,133 58	4.918	3,164 85	17,298 43	Do.
4,882.810	4,772.102	186,632 14	4.845	3,117 90	189,750 04	Mexico City.
77,148.287	74,611.475	2,917,980 21	85.974	55,326 76	2,973,306 97	
81.420	74.340	2,907 36	0.248	159 60	3,066 96	Do.
22,579.137	21,211.755	829,570 52	431.812	277,883 54	1,107,454 05	Do.
170.260	137.702	5,385 39	.....	.....	5,385 39	Do.
1,778.755	1,442.767	56,425 17	37.172	23,921 26	80,346 43	Do.
24,609.572	22,866.564	894,288 44	469.232	301,964 40	1,196,252 84	
587.130	578.671	22,631 25	.....	.....	22,631 25	Durango.
3,133.410	3,111.818	121,700 20	.....	.....	121,700 20	Do.
45.675	43.869	1,715 68	0.703	452 25	2,167 93	Culiacan.
635.305	601.955	23,541 83	13.698	8,814 71	32,356 54	Do.

AT DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85—Continued.

Silver.			Gold.		Total.	Name of mint.
Total bullion.	Equivalent in fine silver.	Value at \$39.169 per kilogram.	Weight of fine gold.	Value at \$643.529 per kilo- gram.		
<i>Kilograms.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>			
270.145	261.569	\$10,229 71	0.766	\$492 95	\$10,722 66	Culiacan.
27.790	27.290	1,067 27	.....	.....	1,067 27	Durango.
2,401.990	2,375.275	92,894 66	.....	.....	92,894 66	Culiacan.
753.610	749.885	29,327 17	.....	.....	29,327 17	Durango.
705.150	695.689	27,207 70	3.857	2,482 36	29,690 06	Culiacan.
604.620	580.632	22,708 17	.....	.....	22,708 17	Durango.
519.860	512.005	20,023 93	.....	.....	20,023 93	Do.
21.590	21.441	838 53	.....	.....	838 53	Culiacan.
651.540	645.557	25,247 08	.....	.....	25,247 08	Do.
1,686.445	1,661.728	64,988 59	.....	.....	64,988 59	Durango.
179.397	168.023	6,571 21	1.798	1,157 13	7,728 34	Chihuahua.
35.400	34.825	1,361 98	.....	.....	1,361 98	Durango.
206.070	197.833	7,737 00	.....	.....	7,737 00	Do.
136.910	135.286	5,290 90	0.524	337 46	5,628 36	Culiacan.
16.600	15.770	616 75	.....	.....	616 75	Durango.
515.310	500.957	19,591 94	.....	.....	19,591 94	Culiacan.
322.940	312.481	12,220 86	.....	.....	12,220 86	Durango.
2,327.770	2,314.760	90,527 90	.....	.....	90,527 90	Do.
719.945	711.220	27,815 12	.....	.....	27,815 12	Do.
498.030	478.669	18,720 28	.....	.....	18,720 28	Do.
2,637.930	2,530.396	98,961 25	.....	.....	98,961 25	Zacatecas.
37.490	36.572	1,430 29	.....	.....	1,430 29	Culiacan.
529.130	510.013	19,946 10	.....	.....	19,946 10	Durango.
737.330	706.751	27,640 27	.....	.....	27,640 27	Do.
56.950	55.331	2,163 95	.....	.....	2,163 95	Do.
142.670	139.407	5,452 07	0.102	65 45	5,517 52	Culiacan.
173.220	170.431	6,665 36	.....	.....	6,665 36	Durango.
52.640	51.668	2,020 68	0.041	26 68	2,047 36	Culiacan.
10.040	9.990	390 69	.....	.....	390 69	Guadalajara.
155.760	154.575	6,045 22	.....	.....	6,045 22	Durango.
3,692.080	3,619.945	141,572 39	0.522	355 74	141,908 13	Culiacan.
1,339.900	1,297.910	50,759 87	.....	.....	50,759 87	Durango.
2,277.530	2,158.507	84,417 03	.....	.....	84,417 03	Do.
2,008.910	1,975.433	77,257 31	.....	.....	77,257 31	Do.
83.530	82.965	3,244 69	.....	.....	3,244 69	Do.
4,189.120	4,042.090	158,082 10	3.539	2,277 45	160,359 55	Mexico City.
5,293.945	5,138.563	200,964 19	.....	.....	200,964 19	Durango.
40,420.857	39,417.760	1,541,583 17	25.550	16,442 18	1,558,031 35	
123,767.157	122,929.197	4,807,637 97	76.974	49,535 00	4,857,172 97	Guanajuato.

I.—WEIGHT AND VALUE OF GOLD AND SILVER BULLION DEPOSITED FOR COINAGE

Name of mine.	Method of treatment of the ore and weight of bullion.					
	Patio process.	Barrel amalgamation.	Leaching.	Smelting.	Pan.	Plates.
<i>State of Guerrero.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Names not given.....				14, 106. 089		
<i>State of Hidalgo.</i>						
Pechuca	60, 100. 400	23, 111. 320		25, 224. 070		
Limapan				2, 855. 062		
	60, 100. 400	23, 111. 320		28, 079. 132		
<i>State of Jalisco.</i>						
Autlan.....	23. 000					
La Bautista.....	605. 851					
Bolaños.....	240. 078					
Bramador.....	1, 662. 468					
Cocoma.....	76. 935					
Cuale.....	2, 716. 657					
Desmoronado.....	1, 820. 105					
Etzatlan.....	3, 141. 953					
Hostotipaquillo.....	5, 278. 801					
Jilitlan.....	6. 113					
Cora Viejo.....	114. 540					
Parnaso.....	32. 575					
Reyes.....	117. 350					
San Sebastian.....	3, 359. 755					
Tecatitlan.....	15. 410					
Various.....	39. 795					
Bullion bought by merchants of Guadalajara.						63. 520
	19, 251. 386					63. 520
<i>State of Mexico.</i>						
Arco.....	766. 370					
<i>State of Michoacan.</i>						
Various.....	1, 943. 142			15, 707. 737		
<i>State of Oaxaca.</i>						
Ixtlan.....	95. 051	479. 608				
Peras.....	5. 918					
Tabiche.....	1. 405	926. 454		50. 753		
Talea.....		1, 366. 149				
Teitipac.....				40. 895		
Totolápan.....	213. 536	645. 614				
Totomachapa.....				44. 850		
Various.....				358. 312		
Bullion brought in by merchants.						48. 850
	315. 910	3, 417. 825		494. 810		48. 850

AT DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85.—Continued.

Silver.			Gold.		Total.	Name of mint.
Total bullion.	Equivalent in fine silver.	Value at \$39.109 per kilogram.	Weight of fine gold.	Value at \$643.529 per kilo- gram.		
<i>Kilograms.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>			
14,106.089	13,172.130	\$515,148 83	28.328	\$18,236 32	\$583,385 15	Mexico City.
108,435.790	106,998.456	4,184,602 61	26.523	17,068 32	4,201,670 93	Do.
2,855.062	2,743.997	107,314 98	9.176	5,905 02	113,220 00	Do.
111,290.852	109,742.453	4,291,917 59	35.699	22,973 34	4,314,890 93	
23.000	22.839	893 21	.....	.....	893 21	Guadalajara.
605.851	602.525	23,564 16	.....	.....	23,564 16	Do.
240.078	238.299	9,319 66	.....	.....	9,319 66	Do.
1,662.463	1,653.362	64,661 31	.....	.....	64,661 31	Do.
76.935	76.543	2,993 56	.....	.....	2,993 56	Do.
2,716.657	2,703.840	105,744 55	.....	.....	105,744 55	Do.
1,820.105	1,811.680	70,852 94	.....	.....	70,852 94	Do.
3,141.953	3,123.391	122,152 55	.....	.....	122,152 55	Do.
5,278.801	5,243.110	205,052 94	.....	.....	205,052 94	Do.
6.113	6.082	237 88	.....	.....	237 88	Do.
114.540	113.984	4,457 82	.....	.....	4,457 82	Do.
32.575	32.347	1,265 06	.....	.....	1,265 06	Do.
117.350	116.776	4,567 03	.....	.....	4,567 03	Do.
3,359.755	3,345.779	130,850 01	.....	.....	130,850 01	Do.
15.410	15.318	599 05	.....	.....	599 05	Do.
39.795	37.606	1,470 73	.....	.....	1,470 73	Do.
63.520	54.222	2,120 51	.....	.....	2,120 51	Do.
19,314.906	19,197.703	750,802 97	.....	.....	750,802 97	
766.370	762.239	29,810 40	.....	.....	29,810 40	Mexico City.
17,650.879	17,358.879	678,888 40	38.294	24,643 30	703,531 70	Mexico City.
574.659	540.449	21,136 42	2.849	1,833 41	22,969 83	Oaxaca.
5.918	.....	.....	5.357	3,447 39	3,447 39	Do.
978.612	957.297	37 438 93	1.213	780 60	38,219 53	Do.
1,366.149	1,337.980	52,327 06	.....	.....	52,327 06	Do.
40.895	40.589	1,587 40	.....	.....	1,587 40	Do.
859.150	806.077	31,524 87	.....	.....	31,524 87	Do.
44.850	44.581	1,743 51	.....	.....	1,743 51	Do.
358.312	286.651	11,210 63	51.741	33,296 83	44,507 46	Mexico City.
48.850	40.204	1,572 34	.....	.....	1,572 34	Oaxaca.
4,277.395	4,053.828	158,541 16	61.160	39,358 23	197,899 39	

I.—WEIGHT AND VALUE OF GOLD AND SILVER BULLION DEPOSITED FOR COINAGE

Name of mine.	Method of treatment of the ore and weight of bullion.					
	Patio process.	Barrel amalgamation.	Leaching.	Smelting.	Pan.	Plates.
	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.
<i>State of Puebla.</i>						
Various.....				189.465		
<i>State of San Luis Potosí.</i>						
Catorces.....	41,051.041			14,112.695		
Do.....				31.830		
Charcas.....	6,710.957			147.435		
Guadalcázar.....	806.881			500.437		
Matehuala.....	11,414.102			7,927.777		
San Pedro.....	9.350			11.133		
Salinás.....				6.030		
Various.....				4,755.155		
Bullion brought in by merchants.						8.136
	59,992.331			27,492.492		8.136
<i>State of Sinaloa.</i>						
Aldama.....	35.420					
Alisitos.....			278.420	781.640		
Bacubirito.....	72.350			288.980		
Cosalá.....	53.980			2,049.950		
Do.....				19.140		
La Cumbre.....	8.640					
Guadalupe de los Reyes.....				10.428		
La Joya.....	25.420		261.040	22.690		
Labitos.....				250.810		
Rastra.....	3.610			17.340		
Rosario.....	11.268					
San Ignacio.....	114.700			6.670		
San Javier.....				131.770		
San José.....	23.965			.480		
San José de Gracia.....	4.665					
San Juan.....	26.380			5.930		
San Lorenzo.....	422.840			74.070		
Santa Cruz.....	395.140			296.150		
Santiago.....	158.475			52.120		
San Tomás.....	641.490			174.603		
Sarabía.....			13.080			
Sinaloa.....	226.080		.940	176.970		
Tule.....	.735					
Yedras.....	110.030			75.130		
	2,335.248		553.480	4,434.871		
<i>State of Sonora.</i>						
Avivechi.....	70.530					
La Barranca.....	12.930		4,388.300	56.590		
Baúcarí.....					1,118.080	

AT DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85—Continued.

Silver.			Gold.		Total.	Name of mint.
Total bullion.	Equivalent in fine silver.	Value at \$39.109 per. kilogram.	Weight of fine gold.	Value at \$643.529 per kilo- gram.		
<i>Kilograms.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>			
189.465	180.131	\$7,044 74	.140	\$90 09	\$7,134 83	Mexico City.
55,163.736	54,534.074	2,132,773 10	.....	.....	2,132,773 10	San Luis.
31.830	31.416	1,228 65	.....	.....	1,228 65	Zacatecas.
6,858.392	6,844.284	267,673 10	.....	.....	267,673 10	San Luis.
1,307.318	1,282.027	50,138 79	.....	.....	50,138 79	Do.
19,341.879	18,991.396	742,734 51	.....	.....	742,734 51	Do.
20.483	19.479	761 81	.....	.....	761 81	Do.
6.030	5.704	223 08	.126	81 08	304 16	Zacatecas.
4,755.155	4,266.373	1,666,853 58	89.563	57,636 39	224,489 97	Mexico City.
8.136	7.485	292 73	.....	.....	292 73	San Luis.
87,492.959	85,982,238	3,362,679 35	89,689	57,717 47	3,420,396 82	
35.420	4.597	179 76	29.781	19,165 17	19,344 93	Culiacan.
1,060.060	1,035.915	40,513 66	.....	.....	40,513 66	Do.
361.330	332.746	13,013 38	18.489	11,898 47	24,911 85	Do.
2,103.930	2,033.534	79,529 34	2.493	1,604 02	81,133 36	Do.
19.140	18.394	719 35	.....	.....	719 35	Durango.
8.640	4.485	175 40	4.025	2,590, 16	2,765 56	Culiacan.
10.428	8.697	340 11	1.433	922 00	1,262 11	Durango.
309.150	301.871	11,805 89	.298	191 99	11,997 88	Culiacan.
250.810	242.483	9,483 27	.....	.....	9,483 27	Do.
20.950	20.492	801 43	.....	.....	801 43	Do.
11.268	11.065	432 75	.....	.....	432 75	Guadalajara.
121.370	119.665	4,679 99	.281	180 64	4,860 63	Culiacan.
131.770	128.538	5,026 99	.....	.....	5,026 99	Do.
24.445	23.151	905 42	.958	616 20	1,521 62	Do.
4.665	1.108	43 35	3.524	2,268 02	2,311 37	Do.
32.310	31.940	1,249 17	.....	.....	1,249 17	Do.
496.910	492.594	19,264 84	.....	.....	19,264 84	Do.
691.290	675.856	26,432 04	.....	.....	26,432 04	Do.
210.595	206.281	8,067 42	.193	124 23	8,191 65	Do.
816.093	811.666	31,743 49	.....	.....	31,743 49	Guadalajara.
13.080	12.753	498 76	.....	.....	498 76	Culiacan.
403.990	391.250	15,301 38	.666	428 88	15,730 26	Do.
.735	.061	2 39	.667	429 00	431 39	Do.
185.220	180.163	7,046 04	.....	.....	7,046 04	Do.
7,323.599	7,089.305	277,255 62	62.808	40,418 78	317,674 40	
70.530	68.527	2,680 04	.....	.....	2,680 04	Hermosillo.
4,457.820	4,366.939	170,786 56	.....	.....	170,786 56	Do.
1,118.080	1,072.065	41,927 39	12.224	7,866 50	49,793 89	Alamos.

I.—WEIGHT AND VALUE OF GOLD AND SILVER BULLION DEPOSITED FOR COINAGE

Name of mine.	Method of treatment of the ore and weight of bullion.					
	Patio process.	Barrel amalgamation.	Leaching.	Smelting.	Pan.	Plates.
	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.
<i>State of Sonora—Cont'd.</i>						
Los Bronces			317. 840	99. 100		
San Agustin						
San Javier	29. 790					
Promontorios			2, 497. 500			
Trinidad			1, 898. 290		195. 900	
Lubiate			241. 720			
Bullion brought in by merchants.	596. 470			1, 263. 210		
Old coin at Hermosillo mint.				1. 732		
	709. 720		9, 343. 650	1, 420. 632	1, 313. 980	
<i>Territory of California.</i>						
Various mines ..				1. 865		
<i>Territory of Tepic.</i>						
La Yesca.....	643. 958					
<i>State of Zacatecas.</i>						
Chalchihuites	7. 870			2, 587. 295		
Do				402. 220		
Fresnillo.....	7, 536. 310			20. 800		
Jerez.....	836. 590					
Mazapel.....	503. 590			634. 260		
Mezquital de Oro .....				. 600		
Minillas	523. 210					
Nieves	154. 420			757. 090		
Noria de Angeles.....	594. 380			750. 990		
Ojo Caliente.....	628. 730					
Panuco	22. 540					
Pinos	91. 850			336. 370		
San Miguel de Mezquital.....				5. 060		
Sombrerete	1, 607. 570			1, 880. 410		
Do	620. 380	1, 070. 170		92. 700		
Veta Grande	32, 564. 220			22. 250		
Villa Nueva.....	367. 060					
Zacatecas	60, 078. 550			47. 510		
Various	7, 450. 180			1, 666. 780		
	113, 588. 350	1, 070. 170		9, 204. 335		
<i>San Francisco, Cal., U. S. A.</i>						
San Francisco, Cal.....				. 530		

AT DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85—Continued.

Silver.			Gold.		Total.	Name of mint.
Total bullion.	Equivalent in fine silver.	Value at \$39.109 per kilogram.	Weight of fine gold.	Value at \$643.529 per kilo- gram.		
<i>Kilograms.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>			
317.840	313.089	\$12,244 60	.....	.....	\$12,224 60	Hermosillo.
99.100	91.758	3,588 57	.....	.....	3,588 57	Hermosillo.
29.790	28.926	1,131 26	.....	.....	1,131 26	Do.
2,497.500	2,451.854	95,889 56	.....	.....	95,889 56	Alamos.
2,094.190	2,034.744	79,576 80	.....	.....	79,576 80	Do.
241.720	234.129	9,156 57	.....	.....	9,156 57	Hermosillo.
1,859.680	1,750.768	68,470 80	.030	\$19 30	68,490 10	Do.
1.732	1.732	67 74	.....	.....	67 74	Do.
12,787.982	12,414.531	485,519 89	12.254	7,885 80	.....
1.865	.147	5 75	1.709	1,099 79	1,105 54	Mexico City.
643.958	640.155	25,035 82	.....	.....	25,035 82	Guadalajara.
2,595.165	2,510.709	98,191 32	.....	.....	98,191 32	Durango.
402.220	388.298	15,185 95	1.037	667 34	15,853 29	Zacatecas.
7,557.110	7,538.428	294,820 38	.478	307 61	295,127 99	Do.
836.590	834.868	32,650 85	.355	228 45	32,879 30	Do.
1,137.850	1,115.696	43,633 75	.188	120 98	43,754 73	Do.
.600	.169	6 61	.324	208 50	215 11	Do.
523.210	522.126	20,419 83	.....	.....	20,419 83	Do.
911.510	887.617	34,713 81	.....	.....	34,713 81	Do.
1,345.370	1,308.159	51,160 79	3.326	2,140 38	53,301 17	Do.
628.730	627.534	24,542 23	.....	.....	24,542 23	Do.
22.540	22.371	874 91	.....	.....	874 91	Do.
428.220	412.069	16,115 61	1.034	665 41	16,781 02	Do.
5.060	4.751	185 81	0.037	23 81	209 62	Do.
3,487.980	3,417.548	133,656 88	0.103	66 28	133,723 16	Do.
1,783.250	1,572.654	61,504 93	.....	.....	61,504 93	Durango.
32,580.470	32,485.419	1,270,472 25	1.442	927 97	1,271,400 22	Zacatecas.
367.960	367.089	14,356 48	.....	.....	14,356 48	Do.
60,120.060	59,869.342	2,341,430 09	14.344	9,230 78	2,350,660 87	Do.
9,110.960	9,042.906	353,659 01	5.201	3,347 00	357,006 01	Do.
123,862.855	122,927.581	4,807,581 49	27.869	17,934 51	4,825,516 00	
.530	.054	6 02	.332	213 65	219 67	Zacatecas.

SUMMARY OF AMOUNTS OF GOLD AND SILVER SENT IN BY EACH STATE

Name of States.	Method of treatment of ore and weight of bullion.			
	Patio process.	Barrel. amalgamation.	Leaching.	Smelting.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Aguas Calientes	35. 990			
Coahuila				92. 250
Chihuahua.....	28, 829. 808	10, 126. 760	4, 722. 670	24, 191. 434
Distrito Federal				22, 830. 817
Durango	19, 143. 062		1, 783. 850	19, 493. 945
Guanajuato	123, 767. 157			
Guerrero.....				14, 106. 089
Hidalgo.....	60, 100. 400	23, 111. 320		28, 079. 132
Jalisco	19, 251. 386			
Mexico	766. 370			
Michoacan	1, 943. 142			15, 707. 737
Oaxaca.....	315. 910	3, 417. 825		494. 810
Puebla				189. 465
San Luis Potosi	59, 992. 331			27, 492. 492
Sinaloa.....	2, 335. 248		553. 480	4, 434. 871
Sonora	709. 720		9, 343. 650	1, 420. 632
Lower California (Territory).....				1. 865
Tepic (Territory)	643. 958			
Zacatecas	113, 588. 350	1, 070. 170		9, 204. 335
United States (California).....				0. 530
	431, 422. 832	37, 726. 075	16, 403. 650	167, 740. 404
Add coinage charge and tax				
Total value				

In the above tables the value of a kilogram of silver has been taken at \$39.109 ; that of a kilogram of gold at \$643.539, the mint tax having been deducted.

TO THE DIFFERENT MEXICAN MINTS DURING THE FISCAL YEAR 1884-'85.

Method of treatment of ore and weight of bullion.		Fine silver.	Fine gold.	Value of silver.	Value of gold.	Total.
Pan.	Plates.					
<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>			
.....	.....	35. 895	.....	\$1, 403 82	.....	\$1, 403 82
.....	.....	89. 266	.....	3, 491 10	.....	3, 491 10
9, 277. 615	.....	74, 611. 475	85. 974	2, 917, 980 21	\$55, 326 76	2, 973, 306 97
.....	1, 778. 755	22, 866. 564	469. 232	894, 288 44	301, 964 40	1, 196, 252 84
.....	.....	39, 417. 760	25. 550	1, 541, 589 17	16, 442 18	1, 558, 031 35
.....	.....	122, 929. 197	76. 974	4, 807, 637 97	49, 535 00	4, 857, 172 97
.....	.....	13, 172. 130	28. 338	515, 148 83	18, 236 32	533, 385 15
.....	.....	109, 742. 453	35. 699	4, 291, 927 59	22, 973 34	4, 314, 890 93
.....	63. 520	19, 197. 703	.....	750, 802 97	.....	750, 802 97
.....	.....	762. 239	.....	29, 810 40	.....	29, 810 40
.....	.....	17, 358. 879	38. 294	678, 888 40	24, 643 30	703, 531 70
.....	48. 850	4, 053. 828	61. 160	158, 541 16	39, 358 23	197, 899 39
.....	.....	180, 131	0. 140	7, 044 74	90 09	7, 134 83
.....	8. 136	85, 982. 238	89. 689	3, 362, 679 35	57, 717 47	3, 420, 396 82
.....	.....	7, 089. 305	62. 808	277, 255 62	40, 418 78	317, 674 40
1, 313. 980	.....	12, 414. 531	12. 254	485, 519 89	7, 885 80	493, 405 69
.....	.....	0. 147	1. 709	5 75	1, 099 79	1, 105 54
.....	.....	640, 155	.....	25, 035 82	.....	25, 035 82
.....	.....	122, 927. 753	27. 869	4, 807, 581 49	17, 934 51	4, 825, 516 00
.....	.....	0. 154	0. 332	6 02	213 65	219 67
10, 591. 595	1, 899. 261	653, 471. 803	1, 016. 022	25, 556, 628 74	653, 839 62	26, 210, 468 36
.....	.....	.....	.....	1, 179, 069 08	32, 397 90	1, 212, 567 98
.....	.....	.....	.....	26, 736, 798 82	686, 237 52	27, 423, 036 34

If the normal values of \$40.915 per kilogram of silver and \$675.416 be substituted for these, the value of the total amount of silver coined will be \$26,736,798.82, and that of the gold \$686,237.52, or together a total of \$27,423,036.34 for the fiscal year 1884-1885.

STATEMENT OF COINAGE AT THE MEXICAN MINTS DURING THE FISCAL YEAR
1884-1885.

GOLD.*

Denomination.	Number of coins.	Value.	Fineness.	Diameter.	Weight.	Mint remedy.
Dollars:				<i>millimeters.</i>	<i>grams.</i>	
20 dollars ..	16,784	\$335,680 00	0.875=21 carats.	34	33.841	$\frac{3}{1000}$
10 dollars ..	8,363	83,630 00	....do	27	16.920	"
5 dollars ...	200	1,000 00	....do	22	8.460	"
2½ dollars ..	200	500 00	....do	18	4.230	"
1 dollar. ...	2,440	2,440 00	....do	15	1.692	"

* Coinage charge on gold, 4.6 per cent.

SILVER.*

Dollars:						
1 dollar	25,226,159	25,226,159 00	$\frac{900}{1000} + \frac{777}{1000}$	37	27.073	$\frac{2}{1000}$
50 cents	233,330	116,665 00	....do	30	13.536	"
25 cents	1,349,932	337,485 00	....do	25	6.768	"
10 cents	1,604,207	160,420 70	....do	17	2.707	"
5 cents .....	.....	.....	....do	14	1.353	"
Copper, 1 cent .....	.....	.....	.....	25	8.00	
Alloy, 1 cent .....	.....	.....	.....	20	.....

* Coinage charge on silver, 4.41 per cent.

STATEMENT OF COINAGE AT THE MEXICAN MINTS FOR THE DECADE 1875-1885.

Period.	Gold.	Silver.	Copper.	Nickel.	Total.
1875-'76	\$809,401 50	\$19,454,054 00	\$30,654 63	.....	\$20,294,110 13
1876-'77	695,750 00	21,415,128 50	9,035 08	.....	22,119,913 58
1877-'78	691,998 00	22,084,203 00	41,364 00	.....	22,817,565 50
1878-'79	658,206 00	22,162,987 65	16,300 00	.....	22,837,493 65
1879-'80	521,826 00	24,018,528 85	14,035 00	.....	24,554,389 85
1880-'81	492,068 00	24,617,395 00	42,258 84	.....	25,151,721 84
1881-'82	452,590 00	25,146,260 00	11,972 85	.....	25,610,822 85
1882-'83	407,600 00	24,083,921 00	.....	\$1,256,000 00	25,747,521 95
1883-'84	328,698 00	25,377,378 85	.....	2,744,000 00	28,450,076 85
1884-'85	423,250 00	25,840,727 70	.....	.....	26,263,977 70
Total ..	5,481,387 50	234,200,586 00	165,620 40	4,000,000 00	243,847,593 90

STATEMENT OF COINAGE OF THE MEXICAN MINTS FROM ITS ESTABLISHMENT
DOWN TO THE YEAR 1885.

Period.	Gold.	Silver.	Copper.	Nickel.	Total.
<i>Colonial epoch.</i>					
(Macuquina), 1537 to 1731	\$8, 497, 950 00	\$752, 067, 456 54	\$200, 000 00	.....	\$760, 765, 406 54
(Columnaria) 1732 to 1771	19, 889, 014 00	444, 629, 211 45	.....	.....	461, 518, 225 45
(Bust), 1772 to 1821	40, 391, 447 00	888, 563, 989 45	342, 893 37	.....	929, 298, 329 82
	68, 778, 411 00	2, 082, 260, 657 44	542, 893 37	.....	2, 151, 581, 961 81
Yearly average					7, 549, 410 39
<i>Independence.</i>					
Bust of Iturbide, 1822 to 1823	557, 392 00	18, 575, 569 69	.....	.....	19, 132, 961 69
Republic (eagle), 1824 to 1875	46, 769, 991 00	778, 479, 511 08	5, 272, 855 93	.....	830, 522, 358 01
	47, 327, 383 00	797, 055, 080 77	5, 272, 855 93	.....	\$849, 655, 319 70
Yearly average					15, 881, 407 84
Republic (eagle), 1875 to 1885	5, 481, 387 50	234, 200, 586 00	165, 620 40	4, 000, 000 00	243, 847, 593 90
Yearly average					24, 384, 759 39

Grand total, \$3,245,084,875.41.

GENERAL INDEX OF SUBJECTS.

A.

	Page.
Abrasion of English coins	112
half-sovereign	91
sovereign	88
French silver coins	112
German silver coins, called in	112
Old German silver coins	112
United States subsidiary silver coins	113
Active circulation of coin in United States January 1, 1886	78
Alabama, statistics of production of	192-193
unrefined gold and silver deposited at mints and assay offices from organization	228
Alaska, comparison of estimates of production, 1884 and 1885	37
details of estimate of production of, 1885	30
gold and silver from, deposited at mints and assay offices from organization	228
production of, 1885, estimate of Israel Lawton	25
Ansëll, remarks relative to trial of the pyx in England in 1861	97
Appropriations for collecting statistics of precious metals	5
recoinage of light coin in Treasury	115
Arizona, comparison of estimates of production of, 1884 and 1885	37
details of estimate of production of, 1885	30
gold and silver from, deposited at mints and assay offices from organization	228
production of, 1885, estimate of Bureau of Mint	25
J. A. Church	25
statistics of production of, 1885	121-123
Arts and manufactures, silver used in, from private refineries	23
Assay offices, charging depositors with cost of transportation	17
withdrawal of funds from	17
Assays of United States coins	96
Assets and liabilities United States mints and assay offices, 1885	226-227
Average monthly price of silver bullion	221
weight and fineness of United States coins assayed annually and monthly	96
Australia, coinage of, 1885	63
1882, 1883, 1884	258
Austria-Hungary, annual consumption of gold and silver in industrial arts	61-62
coinage of, 1885	63
1882, 1883, 1884	258
Banks and private hands, gold and silver in, January 1, 1886	78
Bars of gold and silver manufactured, 1885	39
table of	210-211
furnished by private refineries used in the arts	18
silver from private refineries received at the mints	20
furnished by private refineries for use in the arts	22
Belgium, table of coinage	268-269
Braden, Spruille, production of Montana	150-158
British Columbia, production of, 1885	272
receipts of gold from	17
Browne, J. Ross, reports of	5
Bullion fund, provision for	16
in mints and assay offices January 1, 1886	77
Burchard, Hon. H. C., estimate of consumption of gold and silver in industrial arts	81
stock of gold in country at close of 1879	81
revised estimate of stock of gold coin July 1, 1879	82
Buried treasure in Europe	72

C

California, comparison of estimates of production, 1884 and 1885	37
details of estimate of production of	31
gold and silver from, deposited at mints and assay offices from organization	228
production of, 1885, estimate of Bureau of Mint	25
estimate of Israel Lawton	25
statistics of production of, 1885	124-132
Canada, receipts of gold from	17
Carson mint, charging depositors with cost of transportation	17
withdrawal of cash funds from	17
Character and value of precious metals used by jewelers, manufacturers, &c., 1885	51
Chili, coinage of, 1885	63
Church, John A., production of Arizona	121-123
Circular letter addressed to jewelers and manufacturers	48
supplemental	56

	Page.
Cochin China, coinage of, 1885.....	63
Coefficient of abrasion of gold coins.....	105
half-eagles.....	105
quarter-eagles.....	105
sovereigns.....	89
Coin, abrasion of.....	86-117
assayed at annual and monthly tests.....	96
brought by immigrants.....	66
circulation of United States, January 1, 1886.....	65, 85
basis of estimate.....	75
comparison of estimate.....	83
deductions from previous estimates.....	67-76
estimate of Director Burchard, June 30, 1879.....	82
Dr. Linderman, June 30, 1878.....	83
revised July 1, 1885.....	76
deperdition and waste of.....	86
English gold, deficiency in weight of.....	94-101
fineness and weight, average.....	95
estimate of loss by abrasion of silver.....	113
experiments to ascertain loss by abrasion.....	111
foreign gold, average value at New York assay office.....	98
French silver, estimate of loss by abrasion.....	112
German silver, loss by abrasion.....	112
on those called in.....	112
laws of the United States relative to abrasion of.....	108, 109
United Kingdom relative to abrasion of.....	102
least current weight of English.....	102
United States.....	104, 114
legal weight of United States.....	114
limit of abrasion.....	104
tolerance.....	114
loss by wear.....	86-115
of English silver.....	112
mint remedy for.....	102
recoinage of light-weight gold.....	115
silver.....	116
redemption of light-weight gold.....	115
silver.....	116
weight of United States.....	104
Coinage executed by the mints, 1885.....	38, 63
table of.....	208
Argentine Republic, 1882, 1883, and 1884.....	258
Australia, 1882, 1883, and 1884.....	258
1885.....	63
Austria-Hungary, 1882, 1883, and 1884.....	258
1885.....	63
Belgium, 1882, 1883, and 1884.....	258
Bolivia, 1882, 1883, and 1884.....	258
Brazil, 1882, 1883, and 1884.....	258
Chili, 1885.....	63
China, 1882, 1883, and 1884.....	258
Cochin China, 1885.....	63
Colombia, 1882, 1883, and 1884.....	258
France, 1882, 1883, and 1884.....	258
1885.....	63
Germany, 1882, 1883, and 1884.....	258
1885.....	63
Great Britain, 1882, 1883, and 1884.....	258
1885.....	63
Honduras, 1882, 1883, and 1884.....	258
India, 1882, 1883, and 1884.....	258
1885.....	63
Italy, 1882, 1883, and 1884.....	258
1885.....	63
Japan, 1882, 1883, and 1884.....	258
1885.....	63
Mexico, 1882, 1883, and 1884.....	258
1885.....	63
Monaco, 1885.....	63
Netherlands, 1882, 1883, and 1884.....	258
1885.....	63
Norway, 1882, 1883, and 1884.....	258
1885.....	63
Persia, 1882, 1883, and 1884.....	258
Peru, 1882, 1883, and 1884.....	258
1885.....	63
Portugal, 1882, 1883, and 1884.....	258
1885.....	63
Russia, 1882, 1883, and 1884.....	258
1885.....	63
Sandwich Islands, 1882, 1883, and 1884.....	258
Spain, 1882, 1883, and 1884.....	258
1885.....	63
Sweden, 1882, 1883, and 1884.....	258
1885.....	63
Turkey, 1882, 1883, and 1884.....	258
United States, 1882, 1883, and 1884.....	258
1885.....	63

	Page.
Coinage laws of Great Britain relative to redemption of light coins.....	102
United States relative to redemption of light coins.....	108-109
maternal, new, used in.....	64
old, used in.....	64
of Mexican mints for the decade 1875-1885.....	304
mint at Carson by denomination and pieces from organization, table of.....	244, 245
Charlotte by denomination and pieces from organization, table of.....	241
Dahlonaga by denomination and pieces from organization, table of.....	240
New Orleans by denomination and pieces from organization, table of.....	238, 239
Philadelphia, by denomination and pieces from organization, table of.....	230-237
San Francisco, by denomination and pieces from organization, table of.....	242, 243
nickel coins, 1885.....	255
trade-dollars.....	252-254
various countries, 1885.....	63
table of.....	258
Colorado, comparison of production, 1884 and 1885.....	37
gold and silver deposited at mints and assay offices since organization.....	228
production of, estimate of Bureau of Mint.....	25
Posey S. Wilson.....	25
statistics of production, 1885.....	137, 138
Commercial rate of silver for calendar year 1885.....	20
Commodities, table showing rise and fall in.....	261-263
Comparison of consumption of the precious metals in the industrial arts for different years.....	54
estimate of Directors Linderman and Burchard of stock of gold coin in the country June 30, 1879.....	83
estimates of production of United States for 1884 and 1885.....	37
Consumption of gold and silver in industrial arts in United States, 1885.....	47
classified.....	48-51
comparison with other years.....	54
estimate for number of years.....	80
of H. C. Burchard.....	80, 81
M. L. Muhleman.....	80
falling off in.....	52
from July 1, 1873, to December 31, 1885.....	81
Consumption of gold and silver in Austria-Hungary.....	61, 62
England.....	61, 62
France.....	61, 62
Germany.....	61, 62
Italy.....	62
Russia.....	62
Switzerland.....	61, 62
World.....	61, 62
bars in industrial arts in United States.....	57-59
coin in industrial arts in United States.....	51, 52
estimate of.....	55, 56
foreign.....	51-53
in old jewelry in industrial arts in United States.....	51-53
stamped bars in industrial arts in United States.....	51-53
wire and rolled plate in industrial arts in United States.....	51-53
Contents, table of.....	11, 12
Copper, estimated production of, in United States, by John J. Valentine.....	247

D.

Dakota, Bureau's estimate of production of, 1885.....	25
details of.....	31
comparison of production, 1884 and 1885.....	37
estimate of Augustine Heard.....	25
statistics of production, 1885.....	139-142
unrefined gold and silver from, deposited at mints and assay offices since organization..	228
Deductions from previous estimates in coin stock of United States.....	67, 70, 73, 74, 76
Deficiency in weight of English gold coins.....	101
Delmar, Alexander, estimates of production.....	46
Deperdition of coins through wear.....	86
Deposits of foreign gold bullion at mints.....	16
gold and silver at mints, 1885.....	38
table of.....	196-199
New York for use in the arts, 1885.....	259
at mints, classified as domestic, practically represent productive of United States.....	17
refined gold at mints, 1885.....	17
unrefined gold at mints 1885.....	17
and assay offices since organization.....	228
silver bullion of domestic production, 1885.....	20
deposited at mints from organization, table of.....	228
Depreciation in market price of silver.....	20
Details of distribution of production by States and Territories.....	30
Difference between rate for calculating silver at mints, and commercial value.....	20, 21
Distribution by States and Territories of the production of precious metals in the United States.	25, 30
Doctor Linderman's estimate of gold coin in country, 1873.....	65
Domestic gold bullion exported.....	16
production of silver exported.....	20

E.

	Page.
Eckfeldt, Dr. Fred'k, experiments to ascertain average abrasion on United States gold coin.....	106
Effect of the decline in price of silver on production of United States	26
England, annual consumption of gold and silver in the industrial arts.....	61-62
coinage of 1882, 1883, and 1884	258
1885	63
redemption of worn silver coin.....	116
Errors in previous estimates of coin circulation of United States corrected.....	67, 76
Exchange of gold coin for bars	16
Expenditures for recoinage of light coin in the Treasury	115
Experiments at English mint to ascertain loss by abrasion of silver coin	111
Exports of gold bullion during 1885.....	16
table of.....	212-218
of domestic production	16
foreign production	16
mint and assay-office bars	16
undeposited	16
from 1874-1885.....	85
coin during 1885	39
table of.....	212-218
from 1874-1885	85
San Francisco	220
silver bullion during 1885	20
table of.....	212-218
domestic	20
undeposited	21
from 1874-1885	39
coin from 1874-1885.....	39
trade dollars.....	252, 254

F.

Facilities afforded by the mints to producers of gold.....	15
Falling off in consumption of gold and silver in the industrial arts.....	52
deposits of unrefined bullion at the mints.....	18
Foreign coin consumed in the industrial arts	51, 53
estimated value of, January 1, 1886, table of	250, 251
gold bullion exported	16
coin, average bullion value New York assay office	98
silver bullion deposited at the mints	21
classified as domestic.....	22
France, annual consumption of gold and silver in industrial arts.....	61-62
articles imported into, stamped and taxed.....	271
coinage of, 1885	63
1882, 1883, 1884	258
exportation of articles of gold and silver, table of.....	267
silver registered for duty and exported from.....	270
Fremantle, C. W., letter relative to practice in England of redeeming worn coins	116
statement of loss on worn silver coin in England, 1875-1884.....	117
seigniorage on silver coin in England, 1875-1884.....	117

G.

Garrard, William, production of Nevada.....	159-163
Georgia, production of, in 1885, Bureau's estimate.....	25
details of	33, 189
compared with 1884	37
estimate of Robert P. Waring.....	25, 189
statistics of	189, 192
unrefined bullion deposited at mints.....	228
Germany, annual consumption of gold and silver in the industrial arts	61, 62
coinage of	63
Gold articles exported from France	267
imported, stamped, and taxed in France.....	271
bars exchanged for coin	16
manufactured, 1885	39
table of.....	210, 211
for use in the industrial arts.....	57-59
bullion exported, 1885	16
foreign.....	16
in mints and assay offices January 1, 1886.....	77
refined, of domestic production, deposited, 1884.....	16, 17
1885.....	16, 17
unrefined, deposited, 1885.....	16
coin brought by immigrants	66
in circulation in United States January 1, 1886.....	76
July 1, 1879, estimated by H. C. Burchard	82
country estimated by Dr. Linderman.....	65
national banks January 1, 1886	78
other banks and private hands January 1, 1886	78
state banks and trust companies January 1, 1886	78
Treasury January 1, 1886	78
United States January 1, 1886	76
stock and ownership January 1, 1886.....	78
coins of United States, legal weight of	108

	Page.
Gold coins of United States, least current weight of	108
limit of abrasion	108
relative to abrasion of	108
difference in weight of English	101
exchanged for bars	16
loss by abrasion of	86-115
recoined in United States from 1873-1886	116
coinage executed by mints, 1885	38
table of	208
of various countries	63
consumption of, in industrial arts	47, 56
classified	48-51
in principal nations of world	62
United States estimated by H. C. Burchard	81
M. L. Muhleman	80
deposits and purchases of, 1885	38
table of	196, 199
at mints, classified as domestic, practically represent production of United States	17
classified as domestic since organization of mints, table of	228
for bars at New York assay office for use in the arts	259
of domestic production by states and territories, table of	200-205
foreign bullion at mints	16
elements of production of, in United States, 1885	18
estimate of production of, in United States, 1885	18
by mint officers and agents	85
exports of bullion and coin, 1885	39
imports of bullion and coin, 1885	39
table of	212-218
operated on in refineries of mints and assay offices	219
production of the United States, 1885	15-18
1874-'85	75
estimate of J. J. Valentine	246
from organization of mint	229
world, 1885	272
1882, 1883, 1884	256
ratio to silver each year since 1687	264
registered for duty and export from France	270
used by manufacturers and jewelers, character and value of	51
Goldsmith, I., chief clerk royal mint, London, letter relative to law of England respecting re-coinage	110
Government purchases of silver	19
Great Britain, coinage laws of	102
least current weight of coin of	102
mint, remedy of	102
practice of, in redemption of gold coins	115
weight of coin of	102

H.

Hadley, Walter C., production of New Mexico	164-174
Hagen, Dr. H. A., statement of buried treasure in Germany	72
Half sovereigns, abrasion of	91
examination of light weight	58, 94
Hanauer, A., production of Utah	178-182
Heard, Augustine, production of Dakota	139-142
John, jr., production of Mexico	289-305

I.

Idaho, production of, 1885, estimate of Bureau	25
details of	33
comparison with 1884	37
H. F. Wild	25
statistics of	143-149
unrefined bullion from, deposited at mints	228
Increased business on part of private refineries	18
Immigrants, coin brought by	66
Imports of gold and silver, 1885	16, 21, 39
table of	212-218
at San Francisco	220
silver bullion manifested at commercial rate	212
trade dollars	252-254
India, coinage of, 1885	63
1882, 1883, 1884	258
Iridium in mint deposits, by B. T. Martin	282-286
Italy, coinage of, 1885	63
1882, 1883, and 1884	258
consumption of gold and silver in the industrial arts	62

J.

Jacobs, estimate of the wear of English silver coin	111
Japan, coinage of, 1885	63
1882, 1883, 1884	258
production of, 1885	272
1882, 1883, 1884	256

	Page
Jevons, W. Stanley, annual coefficient of abrasion of sovereigns.....	89
examination into the abrasion of half-sovereigns	91
inquiry into the gold currency of Great Britain	89
K.	
King, Clarence, tables of production	42
L.	
Lawton, Israel, production of California	124-132
Oregon	175-177
Washington	183, 184
Lawver, Dr. W. P., tables of weight and fineness of United States coins from monthly and annual tests.....	95
Lead, estimated production of, in United States, by John J. Valentine	247
Least current weight of English coins	102
United States coins	104, 114
Leech, E. O., computer of bullion, assisted in editing this report	10
Legal weight of United States coins	114
Letter of transmittal	3
Liabilities and assets, mints and assay offices, December 31, 1885, table of.....	226, 227
Light coins sifted out for exportation	105
weight silver coins, mode of redemption of, in United States.....	115
Limits of abrasion of United States coin	104, 114
tolerance of United States coin	114
Linderman, Dr. H. R., estimated stock of gold coin in the country June 30, 1878	83
Loss by abrasion of English coins	112
United States subsidiary silver	113
on 7,000,000 half-eagles.....	105
2,000,000 quarter-eagles.....	105
16,000,000 United States light gold coin	105
on sale of sweeps, 1885	225
worn silver coin in England, 1875-1884.....	117
Low valuations by shippers of bullion	19
M.	
Martin, B. T., iridium in mint deposits	282-286
John Biddulph, experiments in relation to abrasion of English gold coin	91, 92
remarks on English coinage act of 1878.....	100
Mason, Andrew, changes in the way of parting gold and silver bullion at New York assay office.....	275-281
Mexico, coinage of, 1885.....	63, 305
table of	292, 293
1882, 1883, and 1884.....	258
from earliest epoch	248
gold and silver deposited at mints for coinage.....	294, 302
production of gold and silver, 1885.....	258, 272, 289
1882, 1883, 1884.....	257
Minor coinage United States, 1885	38
Mint remedy, English gold coins	102
Mints of United States, coinage of, 1885.....	38
Monaco, coinage of, 1885.....	63
Montana, production of, 1885, Bureau's estimate.....	25
details of	33
compared with 1884.....	37
estimate of Spruille Braden	25
statistics of production, 1885.....	150-158
Monthly and annual assay of coins of United States, 1886.....	96
Muhleman, M. L., estimates of coin circulation of United States.....	73
consumption of gold and silver in industrial arts.....	80
N.	
National banks, gold and silver in, January 1, 1886	78
Netherlands, coinage of, 1885	63
1882, 1883, 1884	258
Nevada, production of, 1885, Bureau's estimate.....	25
details of	34
comparison with 1884.....	37
estimate of William Garrard.....	25
statistics of	159-163
unrefined bullion deposited at the mints.....	228
New material used in coinage	64
New Mexico, production of, 1885, Bureau's estimate	25
details of	35
comparison with 1884.....	37
estimate of Walter C. Hadley	25
statistics of	164-174
unrefined bullion deposited at the mints.....	228
Nickel coinage of the United States, 1885.....	255
No discrimination at private refineries between foreign and domestic bullion.....	22
North Carolina, production of, 1885, Bureau's estimate	25
details of	33
comparison with 1884.....	37
estimate of Robert P. Waring	25
statistics of	185-188
unrefined bullion from, deposited at mints.....	228

O.

	Page.
Old material used in coinage.....	64
Oregon, production of, 1885, Bureau's estimate.....	25
details of.....	36
comparison with 1884.....	37
estimate of Israel Lawton.....	25
statistics of.....	175-177
unrefined gold and silver deposited at mints.....	228
Output of gold and silver coins and bars by the mints and assay offices, 1885.....	38

P.

Palgrave, R. H. Inglis, estimated deficiency in English coins.....	101
estimate of circulation of gold coin in Great Britain.....	93
Parting gold and silver at New York assay office, by Andrew Mason.....	275-281
Persia, coinage of, 1882, 1883, and 1884.....	258
Peru, coinage of, 1882, 1883, and 1884.....	258
1885.....	63
Portugal, coinage of, 1882, 1883, and 1884.....	258
1885.....	63
Price of silver bullion during calendar year.....	21, 221
in London since 1833, table of.....	265
Prices of commodities, rise and fall in, table of.....	261-263
Private refineries, better facilities afforded by, than by the Government.....	19
work of, 1885.....	40
Production of gold and silver in United States, 1885, Bureau's estimate.....	15-18, 19-25
distribution by states and territories.....	25
elements of.....	18
Alaska, 1885.....	25, 30
Arizona, 1885.....	25, 30, 121
California, 1885.....	25, 31, 124
Colorado, 1885.....	25, 133
Dakota, 1885.....	25, 31, 139
Georgia, 1885.....	25, 32, 189
Idaho, 1885.....	25, 33, 143
Montana, 1885.....	25, 33, 150
Nevada, 1885.....	25, 34, 159
New Mexico, 1885.....	25, 34, 164
North Carolina, 1885.....	25, 32, 184
Oregon, 1885.....	25, 36, 175
South Carolina, 1885.....	25, 32, 188
Utah, 1885.....	25, 36, 178
Washington, 1885.....	25, 36, 183
1885.....	272
world, 1882, 1883, 1884.....	257
Africa, 1885.....	272
1882, 1883, 1884.....	257
Argentine Republic, 1885.....	272
1882, 1883, 1884.....	257
Australasia, 1885.....	272
1882, 1883, 1884.....	257
Austria-Hungary, 1885.....	272
1882, 1883, 1884.....	257
Bolivia, 1885.....	272
1882, 1883, 1884.....	257
Brazil, 1885.....	272
1882, 1883, 1884.....	257
British Columbia, 1885.....	272
Canada, 1882, 1883, 1884.....	257
Chili, 1885.....	272
1882, 1883, 1884.....	257
Colombia, 1885.....	272
1882, 1883, 1884.....	257
France, 1885.....	272
1882, 1883, 1884.....	257
Germany, 1885.....	272
1882, 1883, 1884.....	257
Great Britain, 1885.....	272
1882, 1883, 1884.....	257
Italy, 1885.....	272
1882, 1883, 1884.....	257
Japan, 1885.....	272
1882, 1883, 1884.....	257
Mexico, 1885.....	272
1882, 1883, 1884.....	257
Norway, 1885.....	272
1882, 1883, 1884.....	257
Peru, 1885.....	272
1882, 1883, 1884.....	257
Russia, 1885.....	272
1882, 1883, 1884.....	257
Spain, 1885.....	272
1882, 1883, 1884.....	257
Sweden, 1885.....	272
1882, 1883, 1884.....	257

	Page
Production of gold and silver in Turkey, 1885	272
1882, 1883, 1884	257
Venezuela, 1885	272
1882, 1883, 1884	257
United States, 1874 to 1885	85
estimates of Alexander Delmar	46
Clarence King	42
John J. Valentine	18, 246
mint officers and agents	25
statisticians and others	42
principal smelters of Colorado, 1885	138
silver contained in bars furnished by refineries for industrial consumption	23
exported, domestic	20
which does not reach the mints	19
refineries	20
Purchases of silver by the government	19
Pyx coin, average weight and fineness in England	95

R.

Rate used at mints for calculating value of silver	20
Rates of silver to gold each year since 1687	264
Raymond, Dr. R. W., reports of	5
Recoinages and old material used in coinage, estimate of	63
of light coin in the Treasury	115
appropriations and expenditures for	115
weight coins at mints and assay offices, 1873-1886	116
United States gold coin	97, 105
Redemption of worn silver coin in England	116
Reduced consumption of gold and silver in industrial arts	52
Refined gold bullion of domestic production deposited at mints	16
silver purchased at the mints, 1885	20
Refineries, private, no discrimination at, between foreign and domestic bullion	22
work of, 1885	40-42
Refiners, private, bars of, classified at mints as domestic	22
silver from, received at mints	20
better facilities for silver than mints	19
Refinery operations, United States mints and New York assay office, 1885	219
Replies to circulars sent jewelers, &c	50
Russia, coinage of, 1885	63
1882, 1883, 1884	258
consumption of gold and silver in industrial arts	62
production of gold and silver, 1885	272
1882, 1883, 1884	256, 257

S.

Seigniorage on silver coin in England, 1875-1884	117
Sifting out light coins for exportation	105
Silver, abrasion of coins of	113
active circulation of, in United States, January 1, 1886	78
articles exported from France	267
imported, stamped, and taxed in France	271
average monthly price of	221
bars manufactured, 1885	39
table of	210-211
by private refiners for use in the arts	22, 57
received at the mints	20
New York assay office	57
Philadelphia mint	8
San Francisco mint	58
better facilities from private refineries than from government	19
bullion classified as foreign deposited at mints and assay offices, 1885	196, 199
domestic production deposited at mints and assay offices	20
refined at mints and assay offices	20
unrefined at mints and assay offices	202, 207
from organization	228
exported 1885	21, 212, 213
foreign, 1885	21
undeposited, 1885	21
imported, 1885	21
stock in the United States January 1, 1886	78
character and value of, used by jewelers, &c., 1885	51
coin in United States January 1, 1886	76
in national banks	78
other banks and private hands	78
state banks and trust companies	78
Treasury	78
coinage in United States, 1885	38
table of	208
world, 1885	63
1882, 1883, 1884	258
Argentine Republic, 1885	63
1882, 1883, 1884	258
Australia, 1885	63
1882, 1883, 1884	258

	Page.
Silver coinage in Austria-Hungary, 1885.....	63
1882, 1883, 1884.....	258
Bolivia, 1882, 1883.....	258
Belgium, 1882.....	258
Brazil, 1882, 1883.....	258
Chili, 1885.....	63
1882, 1883, 1884.....	258
China, 1884.....	258
Cochin-China, 1885.....	63
Colombia, 1883.....	258
France, 1885.....	63
1882, 1883, 1884.....	258
Germany, 1885.....	63
1882, 1883, 1884.....	258
Great Britain, 1885.....	63
1882, 1883, 1884.....	258
Honduras, 1882.....	258
India, 1882, 1883, 1884.....	258
Italy, 1885.....	63
1882, 1883, 1884.....	258
Japan, 1885.....	63
1882, 1883, 1884.....	258
Mexico, 1885.....	63
1882, 1883, 1884.....	258
Monaco, 1885.....	63
Netherlands, 1885.....	63
1882, 1883, 1884.....	258
Norway, 1882, 1883, 1884.....	258
Peru, 1885.....	63
1882, 1883, 1884.....	258
Persia, 1883.....	258
Portugal, 1885.....	63
1882, 1883, 1884.....	258
Russia, 1885.....	63
1882, 1883, 1884.....	258
Sandwich Islands, 1884.....	258
Spain, 1885.....	63
1882, 1883, 1884.....	258
Sweden, 1885.....	63
1882, 1883, 1884.....	258
Switzerland, 1882.....	258
Turkey, 1882, 1883.....	258
new material used in.....	64
recoinages contained in.....	64
stock consumed in 1885.....	223
made in silver dollar.....	224, 225
consumption in industrial arts in United States, 1885.....	47
classified.....	48, 51
principal nations of the world.....	61-62
deposits at mints, 1885.....	38, 196
for bars for use in industrial arts.....	259
depreciation in market price of.....	20
difference between commercial and Mint rate of.....	20
dollar, highest, lowest, and average price of, since 1873.....	260
effect on production of decline in price in.....	26
imports, 1885.....	39
table of.....	212
loss by abrasion on coin.....	86-115
estimate of annual average.....	113
in England.....	112
experiments.....	111
France.....	112
Germany.....	112
on sale of sweeps.....	225
method of purchase by United States Government.....	219
operation on, in mints and assay offices, 1885.....	219
price of, 1885.....	21, 221
highest, lowest, and average, since 1833.....	265
relative to gold since 1687.....	264
production of United States, 1885.....	19, 22, 16-26
compared with 1884.....	25
distribution among states and territories.....	25, 27-30
elements of.....	25
estimates of agents and mint officers.....	25
John J. Valentine.....	23
does not all reach the mints.....	19
from organization of Mint.....	229
1874-1885.....	85
world, 1885.....	272
1882, 1883, 1884.....	256
purchases by Government.....	19
rate of calculation at mints.....	20
recoinages of light-weight coins.....	116
redemption of light-weight coins.....	115
Soetbeer, Dr. Adolph, annual coefficient of abrasion.....	100
estimate of loss by abrasion of silver coin.....	113
on French silver coin.....	112

	Page.
Soetbeer, Dr. Adolph, estimate of loss by abrasion on old German silver coin	11
production	42
relative to light-weight German coin	100
statement of loss by light weight on German silver coin, called in	112
South Carolina, production of, 1885, Bureau's estimate	25
details of	33
comparison with 1884	37
estimate of Robert P. Waring	25
statistics of	188, 189
Sovereign, abrasion of	88
actual bullion value at New York assay office	99
average annual wear	89
deficiency in weight	90
examination of light weight in 1858	94
Spain, coinage of, 1885	63
1882, 1883, 1884	258
Standard weight of United States gold coin	104
Stock of coin in United States, January 1, 1886	76
Supplemental circular letter addressed jewelers, &c.	56
Sweden, coinage of, 1885	63
1882, 1883, 1884	258
Switzerland, annual consumption of gold and silver in industrial arts	61, 62
coinage of 1885	63
1882	258

T.

Tables:

Annual industrial consumption of gold and silver by principal nations of the world	61
statement of John J. Valentine of production of United States	246-249
Appropriations and expenditures for recoinage of light-weight gold and silver coins ...	115
Articles imported, stamped, and taxed, and exportation of jewelry from France	271
Assets and liabilities, mints and assay offices, December 31, 1885	226
Average monthly price of silver bullion, 1885	221
weight and fineness of the pyx coins of English government	95
Bars manufactured, calendar year 1885	210
Bullion made into silver dollars, wastage and loss, 1885	224
Character and value of precious metals, reported by manufacturers, &c., used in the indus- trial arts during 1885	51
Coinage, executed, calendar year 1885	208, 209
imports and exports of trade dollars	252
mint at Carson since organization	244
Charlotte since organization	241
Dahlonga since organization	240
New Orleans since organization	238, 239
Philadelphia, by denomination and pieces, since organization	230-237
San Francisco since organization	242
of Belgium since 1832	268
Mexican mints, 1885	304
since organization	305
various countries	258
Combined, reported and unreported production of mines of California	131
Comparison of deposits of foreign gold at mints and assay office with net imports of same	75
Consumption of gold in the industrial arts in United States, 1885	80
United States gold coin in the industrial arts	56
Deposits and purchases of gold and silver by value	198, 199
weight	196, 197
of gold and silver New York assay office for bars for use in arts and manu- factures	259
unrefined gold, with states producing the same, 1885, by value	202, 203
weight	200, 201
silver, with states producing the same, 1885, by value	206, 207
weight	204, 205
Estimate of production of precious metals in United States, by mint officers and agents, 1885	25
values of foreign coin, January 1, 1886	250
Gold and silver articles exported and stamped in France	267
registered for duty, and exported from France, 1860-1882	270
deposited at the Mexican mints, 1885	292, 301
of domestic production deposited at Denver mint, 1885	136
production of smelters in Salt Lake Valley and shipped Eastern refineries	182
Highest, lowest, and average price of silver bars in London since 1873	265
value of silver dollar intrinsically since 1863	266
Imports and exports of coin and bullion, 1874-1885	85
gold and silver, calendar year 1885	212-218
port of San Francisco, 1882	220
Nickel coinage, United States, 1885	255
Production of deep mines of Idaho	146-148
gold and silver in Nevada, 1885, estimate of John J. Valentine	160
United States since 1792	229
Nevada estimate of William Garrard	161
principal mines of Dakota, 1885	140
United States, 1885	25
Ratio of silver to gold, 1687-1885	267
Refinery operations 1885	219
Reported production of mines of California by counties, 1885	119

	Page.
Tables:	
Revised estimate of stock of gold coin in United States July 1, 1879	82
Rise and fall in prices in principal commodities taking 1870-1872 as a basis	262
1845-1850 as a basis	260
Showing several estimates of silver in United States during calendar years 1871-'76	46
Silver bullion purchased, coinage mints 1885	221
monthly	222
consumed in coinage, monthly, 1885	222
Standard weight, mint remedy and least current weight of coins of Great Britain	102
Stock of gold and silver coin January 1, 1886	78
Total production of Idaho 1885	149
Unrefined gold and silver of domestic production deposited from organization of mints to close of 1885	228
Unreported bullion, production of mines of Oregon, 1885	176
Wells, Fargo & Co., shipment of bullion from counties of Oregon, 1885	177
Washington Territory, 1885	184
World's production of gold and silver, 1882, 1883, 1884	256
1885	262
Trade-dollar, coinage, imports, and exports of	252, 253
Transportation charge on depositors	17
Treasury United States, gold and silver in, January 1, 1886	78

U.

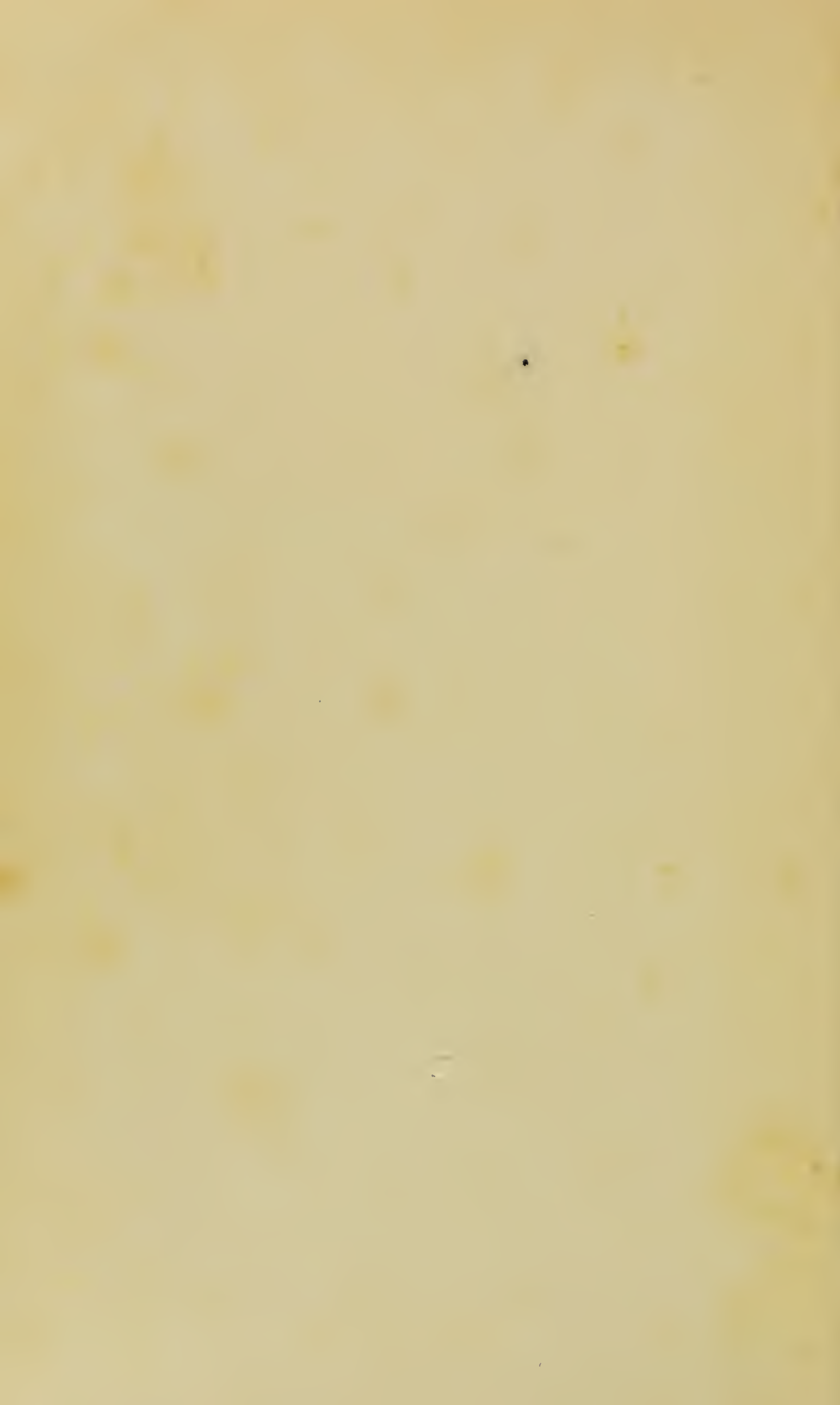
United States, coinage of, 1885	38, 63
coin used in industrial arts	51, 52
consumption of gold and silver in industrial arts	51
practice of, as to recoinage of worn gold coins	115
production of gold and silver in, 1885	15-26
recoinage of gold and silver coins	116
weight of gold coins	104
Utah, production of 1885, Bureau's estimate	25
details of	36
comparison with 1884	37
estimate of A. Hauaner	25
statistics of	178-182

V.

Valentine, John J., estimate of production of gold and silver in United States, 1885	18, 23, 246
considered	42, 43, 46
does not embrace entire country	18
Value and character of precious metals used in arts and manufactures	50
classification of bars by mints and New York assay office and private refineries, 1885 ..	59
of foreign coin, January 1, 1886, table of	250-251

W.

Waring, Robert P., mines of Appalachian range	185-193
Washington, production of, 1885, Bureau's estimate	25
details of	36
comparison with 1884	37
estimate of Israel Lawton	25
statistics of production	183, 184
unrefined bullion deposited at mints	228
Wastage on silver, 1885	225
Waste of precious metals through wear of coins	86
Wear of English coin, estimate of R. H. Ingles Palgrave	93
the sovereign	89
Weight of United States gold coin	103
Wells, Fargo & Co., shipments of gold and silver from California, 1885	132
Wild, H. F., production of Idaho	143-149
Wilson, Posey S., production of Colorado	133-138
Wire and rolled plate consumed in industrial arts	51, 53
Withdrawal of cash funds from mint at Carson and small assay offices	17
Work of private refineries, 1885	40
World's production of gold and silver, 1882, 1883, 1884, table of	256, 257
1885, table of	272



0 1 2 3 4 5 6 7 8 9 10

